BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 24 1948

FOLIC ACID*

BY

JOHN F. WILKINSON, M.D., M.Sc., Ph.D., F.R.C.P., F.R.I.C.

Hon. Physician; Director of Department of Haematology, Royal Infirmary and University of Manchester

"Folic acid," so named by Mitchell, Snell, and Williams (1941, 1944) because of its isolation as a crystalline substance from spinach and other green leaves and grasses, is a recently identified constituent of the vitamin B group. Since it is necessary for the growth of two organisms—*Lactobacillus casei E* and *Streptococcus faecalis* (*Str. lactis R*)—these have formed the basis of a microbiological method of estimation. It has been shown that a number of substances either similar to or identical with this particular "folic acid" (*L. casei* factor, as it is also termed) can be isolated from many other sources, such as yeast, liver, kidney, milk, mushrooms, grasses, and green leaves.

The isolation, identification, and, later, synthesis of one folic acid was the culmination of a series of different independent investigations which became particularly active after Snell and Peterson (1940) demonstrated the existence of a vitamin-like substance essential for the growth of *L. casei*; several groups of workers (Mitchell *et al.*, 1941, 1944; Hutchings *et al.*, 1941, 1944; Stokstad, 1943) have studied the growth factors for various bacteria and noted that extracts of plants or animal organs are essential for this growth. It soon became clear that there were several different but allied "folic acids," and of these at least four crystalline products have since been prepared and found to have different activities on the growths of *L. casei* and *Str. faecalis*.

The very recent synthesis (Angier *et al.*, 1945, 1946) of one of these "folic acids"—pteroylglutamic acid—and the establishment of its identity with Stokstad's crystalline substance from liver (the liver *L. casei* factor) and with the essential growth factor for both *L. casei* and *Str. faecalis* have led to great advances in its therapeutic applications, especially since the pure substance has become generally available.

Vitamin B_c and Folic Acid

Hogan and Parrott (1940), by feeding a diet containing all the then known essential elements, produced a nutritional macrocytic anaemia in chicks which could be prevented or cured by a fuller's-earth concentrate from liver, yeast, green leaves, etc., containing a factor they termed vitamin B_c (Campbell *et al.*, 1944, 1945; Richardson *et al.*, 1942; O'Dell and Hogan, 1943). Vitamin B_c was also isolated from liver and yeast by Stokstad (1943) and Hutchings *et al.* (1944), the yeast factor being less active than the liver factor for growth of *L. casei* and inactive for *Str. faecalis*. Binkley *et al.* (1944) showed that vitamin B_c from yeast was inactive for *L. casei* until after enzyme digestion, when it became equally active for *L. casei* and *Str. faecalis* (*Str. lactis R*).

The vitamin-B_c-deficiency anaemia of chicks was made worse by the administration of sulphonamide derivatives—presumably through their bacteriostatic action preventing either synthesis of an essential anti-anaemic factor or digestion of the B_c conjugate—much greater quantities of vitamin B_c being required to relieve it. The effects of vitamin B_c now appear to be identical with those of synthetic pteroylglutamic acid.

Pfiffner *et al.* (1943) isolated crystalline chick anti-anaemic factors from liver and yeast; the yeast factor was different from the liver vitamin B_c in that the former did not promote growth of *L casei* or *Str. faecalis* until it had been digested with enzymes. Thus the yeast factor for chick anaemia was considered to be a vitamin-B_c conjugate which after digestion with a conjugase enzyme liberated the vitamin B_c identical with the liver vitamin B_c.

Briggs *et al.* (1943, 1944) also suggested that the so-called liver vitamins B_{10} and B_{11} were responsible for the feather formation and growth, respectively, of chicks—the macrocytic anaemia and leucopenia being cured simultaneously—while Campbell, Brown, and Emmett (1944) produced with a synthetic diet a hypochromic anaemia and leucopenia in chicks which could also be prevented by crystalline vitamin B_c. Later work has shown that synthetic pteroylglutamic acid plus β-pyracin will prevent or cure this deficiency anaemia in chicks better than either separately (Scott *et al.*, 1945, 1946).

Folic Acid and Experimental Leucopenia in Rats

From an entirely different angle it was found that agranulocytosis or leucopenia, aplastic or hypoplastic anaemia, and thrombocytopenia with hypoplasia of the bone marrow could be produced quite readily in rats by the addition to their diets of 1–2% of sulphasuxidine (succinyl-sulphathiazole), sulphaguanidine, or thiourea (Martin, 1942; Daft *et al.*, 1943, 1945; Ransome and Elvehjem, 1943).

Complete haematological remissions were obtained by the use of liver extracts, folic acid concentrates (Axelrod *et al.*, 1943), or synthetic pteroylglutamic acid (Daft and Sebrell, 1943; Endicott, Daft, and Ott, 1945; Petering *et al.*, 1947). Totter and Day (1943) also noticed that xanthopterin relieved the leucopenia in rats fed sulphasuxidine on purified diets, but they and others have since failed to confirm this (Axelrod *et al.*, 1943; Daft and Sebrell, 1943; Wright and Welch, 1943).

Vitamin M and Folic Acid in Monkeys

Wills and her colleagues (1932, 1935), while studying tropical macrocytic anaemia, showed that a macrocytic hyperchromic anaemia with leucopenia and granulocyto-

*Lectures (abridged) given to the Section of Experimental Medicine of the Royal Society of Medicine on May 13, 1947, and to the Medical Society of London on Feb. 9, 1948.

penia could be produced in rhesus monkeys fed on a diet similar to that normally taken by many Indians. The features of this condition in the monkey may resemble human tropical macrocytic anaemia or the sprue syndrome (Darby *et al.*, 1945, 1946a, 1946b), including a macrocytic anaemia, a megaloblastic marrow hyperplasia, leucopenia with granulocytopenia, diarrhoea, sore tongue and mouth, and diminution in resistance to infection. Both conditions responded to yeast preparations, such as "marmite," and certain less-purified liver preparations. The unknown factor concerned in relieving this nutritional cytopenia (termed "vitamin M" by Day *et al.*, 1936; Langston *et al.*, 1938) was shown to be different from the anti-pernicious-anaemia liver factor (Wills, Clutterbuck, and Evans, 1937).

Later the good results following the use of yeast, liver, and folic acid on the leucopenia in the macaca monkey were reported by Wilson *et al.* (1942, 1946) and by Waisman and Elvehjem (1943), while it was claimed by Totter *et al.* (1943, 1944) that xanthopterin would relieve the anaemia and leucopenia for a short time, giving a subnormal reticulocytosis (4.5%) but no other permanent improvement.

More recently Day *et al.* (1945) have tried a highly purified *L. casei* factor (active for *Str. faecalis* after enzyme digestion) with complete success in the vitamin-M-deficiency nutritional cytopenia in monkeys. Since synthetic pteroylglutamic acid relieved the condition completely, with a sharp reticulocytosis, rapid improvement in haemoglobin and in the red-cell and white-cell counts, and relief of symptoms, they suggested that vitamin M was probably a vitamin B_c conjugate. Cooperman *et al.* (1945) noticed that fresh liver or lyophilized liver preparations were more active in the treatment of vitamin M deficiency in monkeys than ordinary dried liver powders, which lose some activity from the method of their preparation. They did not find any improvement in the monkeys when fed β-pyracin with folic acid, in contradistinction to their haemotological effects in chick anaemia.

Folic Acid in the Treatment of Pernicious Anaemia

The synthesis of a "folic acid" (pteroylglutamic acid) was soon followed by the early reports of Vilter *et al.* (1945), of Moore *et al.* (1945), and of Spies *et al.* (1945) on its use in the treatment of sprue and pernicious anaemia. Receiving early supplies of this synthetic pteroylglutamic acid for trial, Wilkinson, Israëls, and Fletcher (1946) presented their preliminary results of the treatment of five patients with pernicious anaemia with folic acid when given orally and parenterally. We extended our investigations, and up to date have had some 25 cases of pernicious anaemia under continuous folic-acid therapy for periods up to one and three-quarter years—so that we are able to assess its later effects.

My first 20 patients all had the typical features of uncomplicated relapsing pernicious anaemia, and were chosen in conformity with the rigid criteria that I laid down some years ago and have often re-emphasized as being essential in testing the potencies of anti-pernicious-anaemia substances (Wilkinson, 1932)—namely, a patient with pernicious anaemia in relapse, with a megalocytic hyperchromic anaemia, megaloblastic marrow, achylia gastrica, no complications or marked cord involvement, and no effective anti-anaemic treatment to have been given previously.

A satisfactory response to treatment after the preliminary control period without treatment was judged by (1) a good reticulocyte response (inversely proportional to the initial red-cell count) within 5 to 10 days of beginning treatment; (2) transformation of the megaloblastic into a normoblastic marrow; (3) a sustained rise in red cells and haemoglobin with a return to normal levels; and (4) clinical remission of symptoms. The patients were kept on an ordinary hospital diet without liver, other glandular products, or eggs, while no medication was given apart from the "folic acid" under trial.

Pteroylglutamic acid was given (1) orally in the form of 5-mg. tablets as supplied by the manufacturer or (2) parenterally in aqueous solution, which was prepared by dissolving the pure folic acid powder in distilled water or saline with the addition of the minimal amount of disodium hydrogen phosphate or sodium bicarbonate and sterilizing by autoclaving at 10 lb. for 15 minutes or by passage through a Seitz filter. It is tasteless and offers no difficulty in administration, while intravenous or intramuscular injections did not cause any disturbances or ill effects at all. These patients were kept on pteroylglutamic acid only from the beginning, receiving no other therapy, with the exception of those developing subacute combined degeneration of the cord, who were later given liver or stomach extract.

Results of Parenteral Therapy

The patients referred to in Table I received folic acid either intravenously or intramuscularly in doses varying from 15 mg. daily to 200 mg. in a single dose.

TABLE I.—*Parenteral Folic Acid in Pernicious Anaemia*

Case	Sex	R.B.C. × 10^6	Hb %	Reticulocytes Max. %	Folic Acid Dosage (mg.) and Duration (Days)
1	F	0·85 3·27 (24) 4·92 (328) 5·20 (468)	18 72 (24) 96 (328) 106 (468)	26 (7)	15 i.m. daily [4] 15 i.m. alternate days (6–12) 15 [456] orally
2	M	0·95 2·50 (24) 5·22 (60) 4·13 (549)	22 54 (24) 96 (60) 88 (549)	45·6 (7)	75 i.v. (1, 2) 15 i.m. (18–28) 1·25–20 orally [521]
3	M	1·42 2·62 (14) 3·19 (33) 4·71 (278)	36 64 (14) 86 (33) 108 (278)	33 (7)	200 i.v. (1) 10–30 mg. daily [260]
4	M	2·20 3·14 (14) 2·54 (34) 4·11 (78)	54 74 (14) 64 (34) 76 (78)	18 (8) 11 (23)	50 i.v. (1, 15 100 i.v. (24) 10 orally from (35)

( ) Day since beginning treatment. [ ] Number of days on treatment.

Case 1.—A married woman aged 63 had had intermittent treatment for pernicious anaemia since 1939. She was referred to my clinic in severe relapse—R.B.C., 1,260,000; Hb, 28%; C.I., 1.12; W.B.C., 4,200 (polymorphs 66.5%, lymphocytes 27%, large monocytes 4%, eosinophils 2.5%, basophils *nil*); anisocytosis and poikilocytosis marked; nucleated red cells *nil*, platelets scanty; pronounced megaloblastic marrow; achylia gastrica. After a preliminary control period (R.B.C., 850,000; Hb, 18%; C.I., 1.06; W.B.C., 4,300) she was given 15 mg. of synthetic pteroylglutamic acid intramuscularly daily for four doses, then a week later 15 mg. on alternate days for four doses.

With a prompt reticulocytosis (26% on seventh day), the sternal marrow became normoblastic, and on the 24th day she had R.B.C., 3,270,000; Hb, 72%; W.B.C., 7,200. After this the dose was gradually reduced from 10 mg. per day orally to 5 mg. on alternate days, on which she continued to July 15, 1947, when she complained of paraesthesia in the hands and fingers (R.B.C., 4,520,000; Hb, 94%); this increased in spite of larger doses of pteroylglutamic acid, and on Oct. 7 she had marked unsteadiness of gait, slight slurring of speech, loss of vibration sense in legs below knees, absent ankle-jerks, and loss of joint sense in the right foot; plantar reflexes were still flexor, knee-jerks brisk; Romberg's sign positive; muscle power poor in limbs; there was no muscular wasting; R.B.C., 5,200,000; Hb, 106%; W.B.C., 5,200. The folic acid was discontinued and she was given parenteral liver extract 2 ml. weekly and "pepsac" 1 oz. (28 g.) daily, with gradual improvement in the neurological condition over the following three months. On Jan. 6, 1948, there were still some paraesthesiae

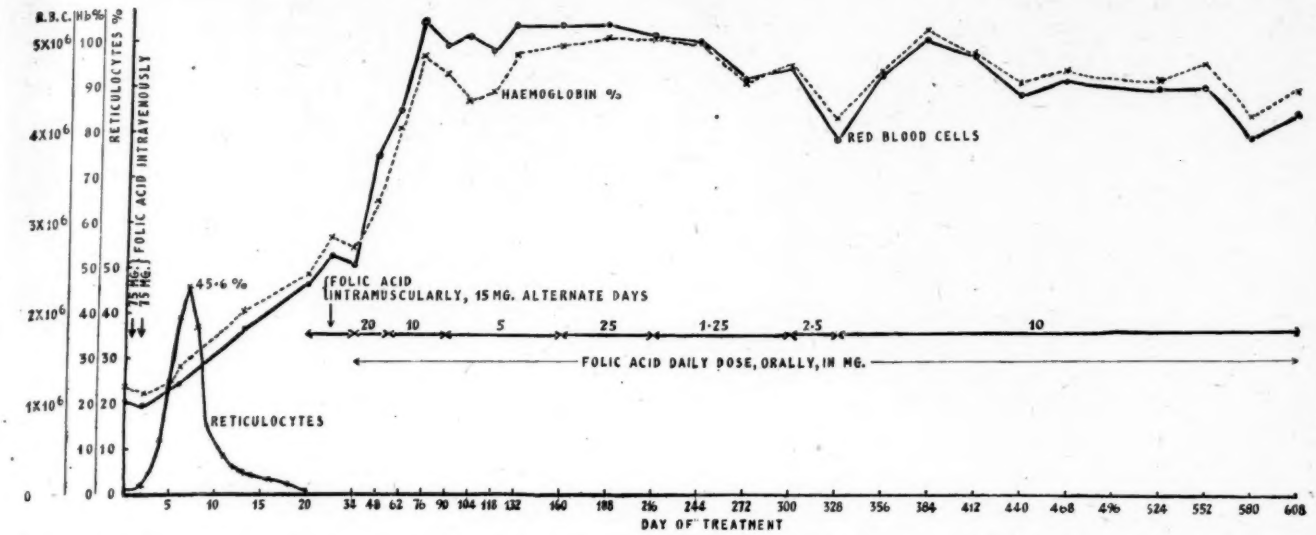


FIG. 1.—Case 2; male aged 58, treated with folic acid parenterally and then orally from 34th day. Preliminary control period omitted from chart. Note change of time scale at 34th day.

of hands and feet; ankle-jerks were negative, Romberg's sign was negative, vibration sense was absent in both legs, plantar reflexes were flexor; R.B.C. 5,320,000, Hb 104%.

Case 2.—A joiner aged 58 had had pernicious anaemia for 18 years, for which he had taken treatment very irregularly. He had relapsed and been referred to me with R.B.C., 1,210,000; Hb, 28%; C.I., 1.16; W.B.C., 2,900 (polymorphs 49%, lymphocytes 45%, monocytes 5%, eosinophils 1%; reticulocytes, 1%; typical megaloblastic marrow hyperplasia; achylia gastrica. He was given 75 mg. of pteroylglutamic acid intravenously on two successive days, the blood rising steadily from R.B.C., 950,000; Hb, 22%; reticulocytes, 1.2% (first day), with a reticulocytosis of 45.6% (seventh day), to R.B.C. 5,220,000 and Hb 96% on Aug. 23, 1946. (See Fig. 1.) On the eighth day the marrow showed a cellular normoblastic hyperplasia. Treatment was continued with 15 mg. intramuscularly on alternate days, and then 20 mg. orally daily. (See Table I and Fig. 1.) On Aug. 23 the dose was gradually reduced to 5 mg. twice weekly, and the blood count, which had remained fairly good until March 4, 1947, began to fall slowly until on April 30 it showed: R.B.C., 3,880,000; Hb, 92%; C.I., 1.05; W.B.C., 4,600; reticulocytes, 2.8% Treatment was then increased to 10 mg. daily, with a good improvement, so that on May 7 his count was: R.B.C., 4,610,000; Hb, 94%; C.I., 1.02; reticulocytes, 3.8%; platelets, 141,000; M.C.V. 84 c.μ, M.C.H.C. 34%, haematocrit 39%. He remained about this level, in good health, on 10 mg. of pteroylglutamic acid daily, and on Jan. 14, 1948, showed R.B.C., 4,130,000; Hb, 88%; C.I., 1.06; W.B.C., 5,800.

Results of Oral Therapy

In Table II are the main details of 17 patients with pernicious anaemia who were treated with pteroylglutamic acid orally in daily doses of 20 mg. initially, with reductions later to 1.25 to 10 mg. daily as the blood counts returned to normal. The following are illustrative cases.

Case 5.—A married woman aged 50 was admitted to hospital with typical features of pernicious anaemia, R.B.C., 950,000; Hb, 24%; C.I., 1.26; W.B.C., 4,400, very active megaloblastic hyperplasia of marrow, and achylia gastrica. She was treated with 20 mg. of synthetic pteroylglutamic acid orally daily, and improved rapidly with reticulocytosis (32.6%) and reversion to a very active normoblastic hyperplasia of marrow on the ninth day—R.B.C. 1,560,000 and Hb 36% on 11th day. (See Table II, Fig. 2.) The dose was reduced to 10 mg.; the blood count reached R.B.C. 3,570,000, Hb 78% (31st day), and then fell on a daily dose of 5 mg. to R.B.C. 3,110,000, Hb 74%. The pteroylglutamic acid was increased, and ultimately was 30 mg. daily before the count could be raised to R.B.C. 4,250,000, Hb 94% on Jan. 27, 1948. She was well clinically.

TABLE II.—*Folic Acid Orally in Pernicious Anaemia*

Case	Sex	R.B.C. × 10^6	Hb %	Reticulocytes Max. %	Folic Acid Dosage (mg.) and Duration (Days)
5	F	0·95 4·51 (57) 4·25 (589)	24 96 (57) 94 (589)	32·6 (9)	20 [18], 10 [38], 5–20 [266] 30 [253]
6	F	1·10 4·00 (82) 2·85 (208)	26 83 (82) 70 (208)	30·6 (10)	5–20 [208]
7	F	1·15 4·22 (68) 4·00 (300)	30 94 (68) 90 (300)	28·4 (8)	15 [17], 10 [22], 5 [28], 1·25 [182], 5 [42], 10 [217]
8	F	1·40 5·30 (115) 4·07 (507)	34 110 (115) 86 (507)	25·2 (7)	20 [17], 10 [56], 1·25–5 [414]
9	M	1·47 5·61 (99) 3·80 (224) 5·37 (476)	36 106 (99) 98 (224) 100 (476)	34·6 (8)	20 [9], 10 [48], 5 [14], 1·25–2·5 [259], 15 [146]
10	M	1·53 5·17 (53) 4·29 (151)	36 86 (53) 86 (151)	30·6 (8)	20 [45], 15 [42], 15 [64]
11	F	1·54 4·82 (201) 5·04 (411)	32 92 (201) 98 (411)	9·8 (7)	20 [36], 10 [164], 10 [210]
12	F	1·82 5·25 (252)	42 106 (252)	28·6 (7)	20 [210]
13	F	2·00 4·30 (34) 4·06 (272)	60 74 (34) 72 (272)	8·9 (9)	30 [20], 20 [63] 30 [189]
14	F	2·08 5·96 (90) 4·60 (377)	40 100 (90) 98 (377)	*13·4 (8)	10 [34], 2·5 [28] 1·25 [56], 2·5 [252]
15	M	2·15 4·35 (40) 4·66 (330)	56 96 (40) 100 (330)	9 (8)	20 [40], 15 [14], 10–20 [276]
16	F	2·45 3·96 (70)	54 58 (70)		20 [56]
17	F	2·46 4·35 (29) 3·81 (197)	80 112 (29) 100 (197)	*4·2 (6)	20 [14], 5 [14], 1·25–20 [168]
18	F	3·28 3·74 (28) 4·13 (63)	86 90 (28) 90 (63)		5 [28] (Liver extract 2 ml. weekly)
19	M	3·76 4·74 (61) 5·82 (117)	94 102 (61) 116 (117)	4·2 (7)	20 [32] Hog's stomach
20	F	3·30 4·12 (7)	90 94 (7)		20 [7]
21	F	3·56 5·30 (56)	96 110 (56)		15 [56]

* Maximum peak probably missed as out-patient.
( ) Day of treatment. [ ] Number of days on treatment.

Case 9.—A male garment-maker aged 47 collapsed at work and was admitted to hospital under my care with pernicious anaemia (R.B.C., 1,470,000; Hb, 36%; very active megaloblastic marrow hyperplasia; achylia gastrica). He was given 20 mg. of pteroylglutamic acid per day orally, and responded very well clinically, with reticulocytosis (34.6% on the eighth day) and an active normoblastic marrow (tenth day); on the 23rd day he had R.B.C. 3,720,000 and Hb 88%. (See Table II.) His treatment was reduced gradually to 5 mg. twice weekly, producing on Sept. 16, 1946, R.B.C., 5,610,000; Hb, 106%; C.I., 0.94; W.B.C., 6,200. Thereafter he gradually fell to R.B.C., 3,800,000; Hb, 98%; C.I., 1.2 on May 6, 1947, and the treatment was increased to 15 mg. daily with improvement in the blood count which has remained at Jan. 12, 1948 (now on 10 mg. daily), R.B.C., 5,370,000; Hb, 100%. Clinically he is very well indeed.

Immediate Results of Treatment

From the results summarized in Tables I and II the following points may be noted:

Rapid haematological responses followed the intravenous or intramuscular administration of pteroylglutamic acid from 15 mg., intramuscularly, to 200 mg. in a single dose, as has been observed with liver extracts when given by the same routes. A daily dosage of 20 mg., orally, was quite adequate to initiate good reticulocytosis and clinical remission in most cases, although the reticulocyte peaks were rather lower than would have been obtained with an active liver or stomach preparation. There was not a striking difference between the rates and the heights of the reticulocyte responses whether the oral or the parenteral route of administration was employed; nor was there more than a very slightly greater rate of red blood cell and haemoglobin formation after parenteral pteroylglutamic acid.

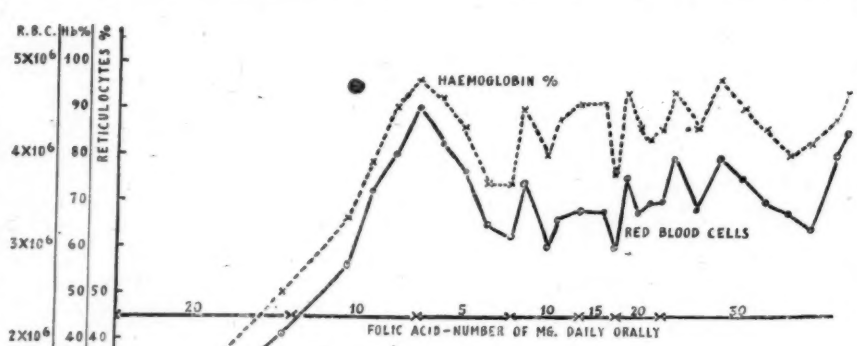


FIG. 2.—Case 5; female aged 50. Preliminary control period omitted from chart. Note change of scale from 25th day.

Not all the patients showed full reticulocytosis in keeping with the initial red cell counts: thus, Case 11 gave only 9.8% (expected 18–26%) on the 7th day, with initial red cell count of 1,540,000; Case 13, 8.9% (expected 14–19%) on the 9th day, with red cell count of 2,000,000; and Case 15, 9% (expected 10–18%) on the 8th day, with initial red cell count of 2,150,000, although subsequently there were satisfactory clinical and haematological improvements.

With the rise of the haemoglobin and red cell counts to normal limits it was often possible to reduce the doses of pteroylglutamic acid to 2.5–5 mg. daily for a time. Eventually, however, with most of the patients the daily maintenance dose had to be increased to 10–20 mg. again after varying periods of time on these smaller doses, since the red cell count and haemoglobin percentage tended to fall slowly—e.g., Cases 5, 6, 8, 9, and 16. (See Fig. 2.)

Macrocytosis still persisted in many patients even when the haemoglobin and red cell count were within normal limits. The white blood cells and platelets showed the expected improvements usually seen after liver or stomach therapy, but not more quickly or effectively.

In all these cases the original megaloblastic sternal bone marrows were rapidly converted to normoblastic ones, and these were always complete before the maximal reticulocyte peaks were reached. This result is in keeping with the observations of Levy (1947) and others, who did serial sternal punctures after giving a single oral dose of 50 mg. of pteroylglutamic acid to one case, and resembles the effects of liver extracts under similar conditions.

The *clinical symptoms* in this group showed rapid improvement in most cases, very much in the same way and at about the same speed as noted after standard liver extracts or hog's stomach therapy (Wilkinson, 1931a, 1931b). Occasional patients—e.g., Cases 12, 15, and 17—however, showed slower responses to pteroylglutamic acid in these doses. The patient usually begins to feel better even before the maximum reticulocyte peak is reached, and this is followed by a rapid improvement in general symptoms; flatulent dyspepsia and diarrhoea clear up, soreness of the tongue disappears, and there is a very rapid improvement in the dyspnoea, palpitation, and lack of energy, the appetite returns, and the whole outlook of the patient becomes more cheerful and normal. Splenomegaly regresses normally as with ordinary standard treatment, but, as would be expected, the achylia gastrica persists. On the other hand I have not seen any improvement in the peripheral neuritis, paraesthesiae, or the more marked symptoms or signs of spinal cord involvement (see below).

Summarizing, the *immediate* effects of treatment with adequate doses of synthetic pteroylglutamic acid, whether administered orally or parenterally, to severe cases of pernicious anaemia were very good, the results being almost but not quite as effective as a potent liver extract or preparation of hog's stomach—there was a sharp reticulocytosis at about the 7th to 9th day, a good increase in red blood cells, haemoglobin percentage, and white cells, and conversion of the megaloblastic to normoblastic marrow, but macrocytosis tended to persist; complete relief of all the clinical symptoms and signs of pernicious anaemia was noted, except those associated with the central nervous system (subacute combined degeneration of the cord and peripheral neuritis). A few patients did show a slightly delayed response even though the reticulocytosis was good. No toxic effects due to the synthetic pteroylglutamic acid, however administered, have been noted in the doses employed.

Later Results of Pteroylglutamic Acid Therapy

Of greater importance are the later effects of continued pteroylglutamic acid therapy. So far, after nearly two years, I have the following additional observations to make. (See Tables I and II.)

No ill effects or reactions due to pteroylglutamic acid itself have followed its continued oral or parenteral use in doses varying from 2.5 to 200 mg. Total dosages in some cases have now reached 10 g. Many of my patients have remained well on doses varying between 2.5 mg. weekly and 20 mg. daily; however, with some it has often been necessary to increase the dose owing to a very definite tendency for the red cells and haemoglobin percentage to fall again in the subsequent months, but in some cases this may probably be due to too small a maintenance dose, which is ordinarily between 5 and 15 mg. daily. A few patients have been slow in regaining normal red cell counts and haemoglobin percentages. Although the red cell counts and haemoglobin percentages were within the normal

ranges, macrocytosis still tended to persist in many patients, the mean corpuscular volume, mean corpuscular haemoglobin concentration, and haematocrit percentage often being outside the normal range. (See Table III.)

TABLE III

Case	Sex	R.B.C.	Hb %	Haematocrit % (M 40–54; F 37–47)	M.C.V. c.μ (82–92)	M.C.H.C. % (32–36)
2	M	4·61	94	39	84	34
9	M	4·92	102	45	90	32
10	M	4·94	104	45	99	28
14	M	4·48	92	42	116	31
1	F	4·62	96	43	94	31
7	F	4·08	90	42	103	32
11	F	4·82	92	45	92	29
13	F	4·19	98	45	107	32
16	F	4·09	108	51	126	29
19	F	4·12	94	42	102	31

Other observers have reported the marked beneficial effects of pteroylglutamic acid on pernicious anaemia (Amill and Wright, 1946; Davidson and Girdwood, 1946; Frommeyer *et al.*, 1946; Goldsmith, 1946; Harrison and White, 1946; Vilter *et al.*, 1947; Wilkinson, Israëls, and Fletcher, 1946); but Kaufmann and Schwager (1946), Meyer (1947), and Vilter *et al.* (1947) do not think that pteroylglutamic acid is as good as a potent liver extract in these patients, and over the longer periods of observation I am inclined to agree, for we have long known that both liver extracts and hog's stomach do produce and maintain complete remissions in pernicious anaemia with an entire return to the normal clinical and haematological state (Wilkinson, 1931a, 1931b).

Subacute Combined Degeneration of the Spinal Cord and Peripheral Neuritis

Perhaps the most important considerations in pteroylglutamic acid therapy are those concerning the neurological system, and the results are disquieting. Eight of my 20 patients had signs and symptoms of central nervous system involvement: one (Case 10) had the symptoms before the beginning of pteroylglutamic acid treatment, which did not lead to any improvement in them; three (Cases 1, 17, and 19) showed definite deterioration in their neurological conditions; while four (Cases 4, 8, 15, and 16), originally free from any neurological involvement, developed within two months acute symptoms and signs of subacute combined degeneration of the cord after receiving pteroylglutamic acid therapy—with peripheral polyneuritis, loss of vibration sense in the lower legs, extensor plantar responses, and poor or absent knee-jerks and ankle-jerks in both legs; nevertheless the haematological conditions improved considerably.

None of these patients showed any improvement on greatly increased doses of pteroylglutamic acid, but some improvement is to be observed since the institution of parenteral liver extracts or desiccated hog's stomach orally (Wilkinson, 1933).

This is a most important point to bear in mind when using "folic acid" preparations, since the development of cord changes is difficult to reverse by any form of therapy, and one of the prime points in the treatment of pernicious anaemia is to give sufficient potent anti-anaemic therapy to prevent the development or progression of neurological symptoms.

These observations parallel those of Spies and Stone (1947) and Vilter *et al.* (1947), who found that during the pteroylglutamic acid treatment of 21 patients with pernicious anaemia four developed neurological signs, while of nine patients with subacute combined degeneration of the cord seven got worse on folic acid. Further, Heinle and Welch (1947) observed, as I have, an acute onset of subacute combined degeneration of the cord in one patient with pernicious anaemia under treatment with pteroylglutamic acid (making a total of three out of their 27 cases). Similar cases are reported by Ross, Belding, and Paegel (1948), Bethell *et al.* (1946), Hall *et al.* (1946, 1947), Davidson and Girdwood (1947), and Heinle *et al.* (1947), who also noted the failure of pteroylglutamic acid to relieve or prevent neurological changes. On the other hand, Doan (1946) and Goldsmith (1946) claimed that the neurological symptoms were relieved by pteroylglutamic acid.

In view of the general experience it is very clear that patients with pernicious anaemia must still have full treatment with potent liver extracts or hog's stomach whether pteroylglutamic acid is given or not. The latter may have a place in initial therapy where quick results are needed, for those sensitive to liver extracts, and perhaps for ill-nourished patients, although highly potent liver extracts are quite adequate. I am fully of the opinion that pteroylglutamic acid is neither the best nor the cheapest form of treatment for pernicious anaemia and must not be given alone to patients with neurological symptoms.

Refractory Macrocytic Anaemias

From time to time cases of macrocytic anaemia are seen with blood pictures resembling pernicious anaemia but usually having normoblastic marrows, although refractory megaloblastic anaemias are also seen. They may have normal gastric acidities or achlorhydria gastrica, and are refractory to ordinary anti-anaemic treatment. Some are said to respond to treatment with proteolysed liver extracts, while others certainly do not.

Four such refractory cases were treated in my clinic with pteroylglutamic acid (three orally, one intravenously) without the slightest haematological or clinical improvement. They all had normoblastic marrows, two had achlorhydria, one a normal gastric acidity, and one hyperacidity. (See Table IV.) None of these patients had any obvious or

TABLE IV.—*Refractory Macrocytic Anaemias*

Case	Sex	Gastric Acidity	R.B.C. Initial	Hb % Initial	W.B.C. Initial	Folic Acid Dosage
W. G.	M	Normal	2·10	64	3,200	20 mg. orally [28]
			2·32 (28)	64 (28)	1,600 (28)	
R. B.	M	Hyperacidity	1·06	24	3,400	100 mg. i.v.
			0·99 (14)	24 (14)	3,600 (14)	
M. S.	F	Achlorhydria	1·72 (1)	34 (1)	3,200 (1)	20 mg. orally [14]
			1·50 (15)	30 (15)	2,600 (15)	
			2·05 (1)	50 (1)	4,200 (1)	10 [14], 20 [63]
			2·28 (91)	48 (91)	3,200 (91)	40 [14]
A. M.	F	,,	2·72	56	6,200	20 mg. orally [14]
			2·84 (14)	62 (14)	8,000 (14)	
			3·60 (70)	64 (70)		Proteolysed liver [56]

All four patients had normoblastic marrows.

detectable nutritional deficiencies and were on perfectly adequate dietary intakes. They do not correspond to the nutritional macrocytic anaemias so commonly quoted in the American literature by Spies and others, in which there were marked nutritional deficiencies.

Davidson and Girdwood (1946, 1947) have noted some response in liver-refractory anaemias, but the blood remained macrocytic until further liver therapy was given, while Watson *et al.* (1945) did not observe any improvement in similar refractory cases after 5 mg. of a folic acid concentrate daily for six days.

Achrestic Anaemia

This is a primary hyperchromic megalocytic anaemia characterized by a megaloblastic hyperplasia of the marrow (identical with that of pernicious anaemia), free hydrochloric acid in the gastric secretion, little or no disturbance of the gastro-intestinal tract, no neurological symptoms or signs, no pyrexia, and no evidence of haemolysis; the

general anatomy resembles pernicious anaemia, and there is a failure in varying degree to respond to specific anti-pernicious-anaemia therapy, the course being sometimes prolonged with the help of blood transfusions (Wilkinson and Israëls, 1935, 1936).

The following is the report of a patient with achrestic anaemia under the care of Dr. Stock.

A housewife aged 26 complained of weakness, lack of energy, dyspnoea, palpitation, and increasing pallor. There were no gastro-intestinal symptoms, glossitis, or involvement of the central nervous system or peripheral nerves. No haemolysis was to be found. Gastric secretion contained normal amounts of hydrochloric acid. Sternal puncture on May 7, 1947, showed an active cellular marrow with 42.5% megaloblasts, while a few days later it contained 8% megaloblasts and 34% normoblasts and was still very active and cellular. A blood count on April 21 showed: R.B.C., 900,000; Hb, 25%; W.B.C., 5,000; reticulocytes, 1.6%; M.C.V., 128 c.μ; M.C.H.C., 31.3%. On April 30 it was: R.B.C., 1,200,000; Hb, 23%; W.B.C., 3,800; platelets, 93,600. She was given synthetic pteroylglutamic acid, 20 mg. per day orally, and a reticulocyte peak of 27.4% was obtained on the 8th day. The bone marrow still showed 8% megaloblasts on the 10th day, and on May 9 the R.B.C. was 1,800,000; Hb, 45%; platelets, 206,000; and reticulocytes, 15.2%. The haematological and clinical conditions continued to improve, and on June 4 her blood count was R.B.C., 3,600,000; Hb, 75%; C.I., 1.04; W.B.C., 10,000. At this stage she was given liver extract instead of folic acid, and on Dec. 17 reached R.B.C., 4,500,000; Hb, 95%; C.I., 1.05; W.B.C., 8,600.

(The conclusion of these lectures, with a list of references, will appear in our next issue.)

ACUTE INTUSSUSCEPTION IN CHILDHOOD

BY

BRENDA MORRISON, M.D.

AND

DONALD COURT, M.D., M.R.C.P.

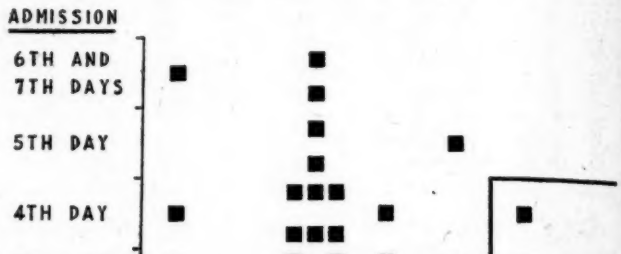
From the Department of Child Health, Royal Victoria Infirmary, Newcastle-upon-Tyne

The detailed study of 100 children treated for acute intussusception in this department from 1944 to 1946 has revealed certain facts which we believe will help the family doctor as well as those responsible for treatment. In the past thirty years the reported mortality has fallen from nearly 40% to less than 10%, yet while the figure for children treated in the first 24 hours is below 5% it rises steeply to 20% or more when the disease remains untreated for more than two days.

Time is an important and often a vital element in all disease, and we have paid special attention to the exact duration of the illness and the times when the different symptoms and signs made their appearance, when the doctor was called, and when the child reached hospital.

Of the 100 cases there were 83 in which accurate time-intervals were known, and of these 66 (80%) were seen by the doctor within the first 24 hours, but only 34 (41%) were admitted to hospital within that period. (See Graph.) Of the 80 seen within 48 hours only 53 had reached hospital by the end of the second day, while the admission of the remainder was not completed until the seventh day. This delay is culpable in view of the increasing mortality after the second day. It suggests that the problem of acute intussusception, in this area at least, is primarily not concerned with improving methods of treatment but rather with the ability to suspect this disease in the first 24 hours and ensure prompt admission to hospital.

The accepted description in British textbooks is so dramatic that the failure of the family doctor to recognize it in many cases is unexpected. Further, even the passage of blood from the bowel does not invariably bring the disease to mind; for of those who passed blood and were seen by the doctor 41 (79%) were admitted within 12 hours and 11 (21%) were not admitted within 12 hours of the event. Of the latter, 6 were not admitted for 48 hours or over. This



Graph showing the relation between contact with the family doctor and admission to hospital in 83 cases.

failure to recognize acute intussusception in its early stages suggests that the traditional description may need modification in the light of local experience.

When faced with a child who may have intussusception the first and most important step is to take a detailed history of the illness from the mother or from someone who has been with the child all the time. This is so essential for diagnosis in an early case, and so valuable in assessing the need for resuscitation and operation in many of the later cases, that we have always considered it worth while to send for the mother if she was not with the child even though many of our patients live up to 50 miles from the hospital.

At the beginning the physical signs alone may not be sufficient to indicate the need for admission to hospital. The diagnosis should not be delayed until the discovery of an abdominal tumour, as its detection may require a level of experience which comes only from frequent and regular contact with the disease in a large hospital.

The description of the disease is similar in most British textbooks. A healthy, well-nourished male child, with no history of recent illness, at 9 months or shortly after weaning is seized by violent abdominal pain, with pallor and collapse. The pain recurs at intervals of about half an hour and the spasms last from a few seconds to a few minutes, the child drawing its knees up and rolling about. Vomiting may occur, although it is not a prominent symptom. Apart from an initial stool, constipation is the rule, though after a variable unspecified interval dark-red blood resembling red-currant jelly is passed per rectum, and the diagnosis then becomes apparent.

Such a picture is obviously diagnostic of acute intussusception, but during the first 24 hours it was present in only 39 of the 100 cases; yet if we aim at a mortality rate below 5% such treatment must be completed within the first two days. We shall therefore reconsider in detail the early clinical picture of this disease.

Aetiological Factors

Age.—The accepted age of onset is 6 months. Table I shows that, though the condition is rare before 6 weeks, 33 cases occurred between 3 and 6 months. In fact, almost as many

TABLE I.—*The Age in 100 Cases of Acute Intussusception*

	Months				Years		
Age:	Under 3	3–5	6–8	9–11	1–2	2–6	7–12
No. ..	3	33	35	11	8	7	3

occurred in this period as in the following three months. There were 82 in the first year, and after 18 months the disease was uncommon.

Sex.—A striking male predominance is generally accepted, but in this series 45% were females.

Nutrition.—The view that well-nourished, often exceptionally well nourished, children are mostly affected was confirmed. In 84 children whose state of nutrition was recorded it was described as "very good" in 80 and "poor" in only 4.

Precipitating Factors.—Dietary changes or indiscretions can be excluded with reasonable certainty in many cases, especially those under 4 months. After this age the extent of intermittent unofficial additions to the diet is unknown. As the actual process of weaning or the recent establishment of mixed feeding was present in only 29 cases they cannot be considered of major significance.

Respiratory or Other Infective Illness.—In 10 children the intussusception followed a few days' malaise, usually with evidence of mild respiratory infection, and in four there was a preceding gastro-intestinal infection. This is not the place to discuss the possible role of infection in aetiology, but these cases are important because the infective signs may be considered sufficient to account for the illness, and the intussusception may be missed or the diagnosis delayed. In one such case the child had bronchitis for several days and later became ill. Vomiting, pain, and even the passage of blood from the rectum went unnoticed, and he was admitted to hospital moribund from bronchopneumonia. A very tight ileo-ileal intussusception was found and reduced at operation, but the child died.

The Clinical Picture in the First 24 Hours

TABLE II.—*The Main Combination of Symptoms in the First 24 Hours*

Clinical Features	No. and % of Cases
Pain, vomiting, and blood	39
Pain and vomiting	34
Vomiting, blood, and minimal pain	10
Vomiting	5
Pain and blood	4
Pain	4
Blood	4

In 82 cases the health and behaviour in the preceding week had been completely normal and the onset of the disease was sudden and unexpected. Almost always the parents were able to give the exact time when the initial vomit, screaming attack, or collapse occurred. In the remaining 18 the precise time of onset was blurred by a few days of respiratory, gastro-intestinal or other infection, though even here careful inquiry revealed a sharp change in the symptoms consistent with the beginning of the bowel invagination. Pain in one or more of its varied expressions was the presenting symptom in 55 of the children; vomiting in 34; and collapse, with the child found pale and cold in the cot or pram, in five. The spontaneous passage of obvious blood from the bowel was the first indication of the disease in only four cases. The remaining two cases started with a stubborn refusal to feed.

Pain.—The recognition of pain in babies is often difficult. Some scream, some cry loudly, others whimper, and an important minority are quietly restless. It is in the last type of case that diagnosis may be long delayed. We have seen a child drawing his knees up and blanching with spasms of pain, rolling his head about, and then rolling over on to his face, yet never uttering a sound. The spasmodic nature of the pain is a constant feature. Distress is often severe during the spasms, and in over half the cases there was also striking pallor. Between the spasms the child lies quietly, as though exhausted, and often sleeps. They last from a few seconds to a few minutes, and the interval between them may be anything from five minutes to several hours, but as the condition worsens they tend to become more frequent. During the attacks of pain the child draws the knees up to the abdomen, and the older babies and children roll over on to their hands and knees and sometimes around the bed.

Vomiting.—Vomiting occurred in 88% of the children in the first 24 hours. It is usually an early and often the presenting symptom. At first whatever is in the stomach is vomited during or after a spasm of pain, and the amount is not large unless the baby is drinking well between attacks. The vomiting, however, can be very forceful, and there may be slight bile-staining, making the vomitus yellow or light green. When obstruction is established the vomit changes in character: it is now copious and dark green or brown, resembling coffee-grounds, or is frankly faecal. It is very important to distinguish between these two types of vomiting, as the latter indicates serious intestinal obstruction.

The Bowels.—The frequency and character of the stools are together particularly important, because the common alternative diagnosis leading to delayed admission is infective gastro-enteritis. The traditional picture is of one or two normal or loose stools at the onset, followed by the passage of blood and mucus without faeces. In the week before the disease started 96 children had normal stools and four a mild diarrhoea. After the onset only eight had complete constipation, and they were all admitted on the first day. The passage of apparently normal stools was more common than we expected; in 36 this occurred in the first 24 hours and in eight as late as the second or third day. Unless early treatment has taken place abnormal stools are eventually passed in most cases. The main types of stool in 80 children with detailed information on this point were as follows: blood or blood and mucus, 46%; blood intimately mixed with faeces, 21%; a stool streaked with blood, 19%; frequent small brown liquid stools, 5%; loose, green, and undigested stools, 7%. Mucus was present in 30% of the children with abnormal stools. In 93% the total number of stools before admission was three or less, and only in the small group with six or seven offensive brown liquid stools could the dangerous alternative diagnosis of infective gastro-enteritis by the family doctor be justified.

Spontaneous Passage of Blood.—This is considered the cardinal diagnostic feature of acute intussusception, and stress is laid on its appearance within the first six hours or, less commonly, towards the end of the first day. Its relation to the duration of the disease in the present group is shown in Table III.

TABLE III.—*Time when Blood was First Passed*

At the onset of symptoms ..	4	On the third day	2
Within the first 12 hours ..	30	Not recorded	2
Within the second 12 hours	22	Never	24
From 24 to 48 hours ..	16		100

It was completely absent in 24 cases, 13 of which were admitted to hospital on or after the third day. In only 56 cases was blood passed during the first 24 hours. It is such a disturbing event for the parents that it is unlikely to be disregarded, and so in a disease where progress must be measured in hours rather than days the fact that it may be a late or an absent sign is of great diagnostic importance. In fact, if the present mortality is to be lowered the condition must be suspected on other evidence alone.

Physical Signs.—The physical examination can be conclusive, but during the vital first day of the illness it may yield very little evidence. Although obvious constitutional disturbance was present after admission in 80 cases, the proportion of babies who do not seem to be particularly ill between the spasms must

be higher when first seen by the family doctor. The positive signs fall into two groups—those of "shock" or constitutional disturbance, and the local changes in the abdomen. The factors concerned with the production of "shock" or collapse are probably nervous "reflex" effects from the pulling on the mesentery by the intussusception, and from the severe colicky pain and loss of fluid in vomiting. They develop together and it is difficult to differentiate between them, though the former is probably the more important, particularly during the first 24 hours. Marked pallor, quietness, and limpness, with a rapid heart rate, are frequent, and can be quickly produced by a severe spasm of pain followed by vomiting. On the first day these often alternate with crying and restlessness due to pain. Sunken eyes, loss of skin tone, and dryness of the mouth denote dehydration and become more evident on the second and third days. When intestinal obstruction is established the combination produces a desperate picture. The baby with anxious, grey, cyanotic facies, restless movements of head and limbs, and coldness and blueness of the extremities then enters the final stage of complete peripheral circulatory failure.

Fever.—Here we wish to make a substantial alteration in the traditional picture. It is often stated that the temperature in intussusception is normal or subnormal. Others, while admitting the possibility of moderate fever, say that this is a late or terminal sign. In our cases some rise in temperature was the rule, even in the first day of the disease, and in one-half of them it was as high as 100–104° F. (37.8–40° C.). Fever therefore cannot be adduced as evidence in favour of infective gastro-enteritis. What is more, in two children seen since this survey was completed a temperature of 104° F., with no evidence of systemic infection, was associated with frank convulsions in the first 48 hours of the intussusception.

Signs in the Abdomen.—In a vigorous child the abdomen can be very difficult to palpate because of the strength of the muscles and the resistance induced by tenderness. Once obstruction is established the distension may make it difficult to feel a mass. On the other hand, in a collapsed baby the tumour may be felt and handled with the greatest of ease and little or no protest. It must be emphasized that ease of palpation varies greatly from case to case, and if the history is suggestive admission should never be delayed until the tumour has been felt. It is often helpful to examine the abdomen with the baby in the prone position, on its hands and knees, or on the mother's lap. The mass, as is well described in most accounts of the disease, is cylindrical or sausage-shaped and lies somewhere in the line of the colon, except in ileo-ileal invaginations. The consistency varies from time to time; the tumour can often be felt to harden under the hand during palpation, while at other times it may become so ill-defined that it is difficult to be sure of its existence. Localized tenderness over the tumour is usually present and there may be well-marked muscle-guarding. This is a sign of some importance, especially if the mass is not very well defined.

The lower border of the liver and the edge of the rectus muscle may, however, deceive even the most experienced. Faecal masses are less confusing, as they are usually multiple and are present in the rectum as well as the colon. When the mass is at one of the colonic flexures and under the costal margins it may be quite impalpable. Though a tumour was felt in 88% of this series the difficulties have been stressed in order to emphasize the danger of waiting for its detection before sending the child to hospital. Distension and visible peristalsis are grave signs, as they denote an established obstruction. They indicate a very serious condition and the need for careful preoperative resuscitation.

Rectal Examination.—Rectal examination can give information in three main ways and should never be omitted:— (1) The presence of blood on the finger or its passage after the examination; (2) the direct palpation of the apex of a low intussusception; and (3) the empty, even ballooned, condition which is present in many cases but requires experience for recognition. Dance's sign, or an emptiness in the right iliac fossa, is of no value, as it is quickly masked by the movement of coils of small gut into the area.

Diagnostic Barium Enemata.—We feel that these are scarcely ever required for the diagnosis of acute intussusception. A detailed history with careful and, if need be, repeated examination will provide the answer in almost every case. Where circumstantial evidence is strong but conclusive proof is lacking, a laparatomy under modern hospital conditions adds little to the risk while leading to accurate diagnosis and prompt treatment. Though the experience of diagnostic barium enemata in this department is small it is sufficient for us to disagree with those who say that the manipulation involved has no adverse effect on the child's general condition. The proper use for this technique is in the investigation of suspected subacute or chronic intussusception.

The Anatomical Type of Intussusception

It is well known that mortality is higher in intussusception involving the small bowel. From the clinical point of view it is sufficient to divide the different anatomical types into three main groups: (1) small bowel, including ileo-ileal and ileo-ileocolic; (2) boundary, with ileocolic, ileocaecal, and caecocolic types; and (3) large bowel, arising at some distance from the ileocaecal valve. The relative distribution and associated mortality in the present series are shown in Table IV. Although the number of cases in the small-bowel group here does not admit of statistical proof there is no doubt of their greater risk. It would be valuable if a clear clinical distinction could be made so that the small-bowel invaginations could be discovered very early in the disease. Unfortunately this cannot always be done with certainty, but the following tentative conclusions can be drawn from the present survey.

TABLE IV.—*Anatomical Type*

	Small Bowel	Boundary	Large Bowel	Unknown
No. of cases ..	14	77	4	5
Deaths	2 (14%)	8 (10%)	—	—

Small-bowel Intussusception.—(1) Ileo-ileal:—A study of the literature suggests that these invaginations occur more commonly after 2 years of age. This was true of our three cases. The spontaneous passage of blood is a late event. An abdominal tumour is difficult to feel and may be situated at or just below the umbilicus. Because of these two features, and in spite of the early collapse which is often present, admission is delayed, and the children are seriously ill when they reach hospital. (2) Ileo-ileocolic:—There were 11 of this type with a clinical picture very similar to ileo-ileal intussusception, though the ultimate passage of the intussuscipiens through the ileocaecal valve leads to more frequent recognition of the abdominal tumour.

Boundary Intussusceptions (ileocolic, ileocaecal, and caecocolic types).—In these 77 children blood was passed early in the disease in most cases. An abdominal tumour was readily felt, especially in the ileocaecal and caecocolic varieties, where it may be in the left flank when the child is first seen. In nearly one-third of this group the head of the intussusception was felt on rectal examination. Ileocolic invaginations occupy a position midway between the ileo-ileal and the ileocaecal and large-bowel types. They have no special features which permit their accurate separation from the rest of the boundary group.

Large Bowel (colocolic intussusception).—There were four invaginations of this type, starting at some distance from the ileocaecal valve. The clinical picture was similar to the boundary intussusceptions, and there were no deaths.

Treatment

Acute intussusception is a serious emergency, and where so many different medical functions are involved—diagnosis, resuscitation, anaesthesia, operative surgery, and general paediatric care—there will be divided authority and responsibility. It is therefore essential for treatment to be in the hands of a team each member of which knows his part and the extent of his responsibility.

We find that the best working arrangement is to have the paediatrician responsible for the conduct of the case,

with a special concern for resuscitation at all stages of the illness, full consultation with the surgeon taking place on diagnosis, the best time to operate, and the treatment of complications.

Pre-operative Treatment

The important part played by shock and later by dehydration in the outcome of the disease demands their prompt control. Further, if this resuscitation is to be fully effective it must be well under way before the operation begins. We cannot help feeling that in previous accounts of the disease some of the deaths which occurred during or soon after the operation and were attributed to surgical intervention were in fact deaths from uncorrected circulatory failure. The operation was rather the last straw for a circulation already in a state of serious breakdown. Further, the technical difficulty of canalizing a vein in a small child on the operation table, with the surgeon and his assistant working against time to get the gut replaced and the wound closed, and the small space available, are likely to defeat the most experienced, and such a situation should never be allowed to arise. It is equally risky to leave the transfusion till the end of the operation, when the child may be irreversibly collapsed and the technical difficulties greatly increased by the peripheral circulatory failure and the empty veins.

During the early part of this series it became our practice to transfuse any child showing evidence of collapse or dehydration or of established obstruction. Serum or plasma was given initially—approximately 100 ml. for an infant below 9 months and 150 ml. for those between 9 and 18 months. The aim was to get the child as fit as possible before going to the theatre—even though this meant a delay of several hours. Saline solutions were given later if required. The results were encouraging, and the practice was extended to include all babies under 18 months and older children with more than 24 hours' history or with signs of collapse. Unexpected difficulties in reduction necessitating much manipulation or even resection have been encountered at operation when the local and general signs have not given cause for alarm, and in such cases the advantages of an established pre-operative infusion have been great. In the ordinary course of events, after a successful reduction the drip can be discontinued 12 to 24 hours after operation, but when there has been much vomiting or any abdominal distension it may be necessary to continue it for several days combined with gastric suction.

Operation

Both anaesthesia and the technique of surgical reduction are the province of the specialist and we are not competent to offer detailed comment. We know from experience, however, how important are the quality of anaesthesia, both during and after the operation, and the necessity for obtaining the help of a skilled anaesthetist. If this is done and the induction is started only when the surgeon and his assistants are quite ready the length of anaesthesia is reduced to a minimum. These babies tend to vomit during operation, and a nasal catheter passed into the stomach beforehand and left in position will often assist the anaesthetist and later the paediatrician. Although speed and gentleness are obviously desirable in all cases we find that there is considerably less trouble from vomiting and distension when reduction is carried out inside the abdomen.

Immediate Post-operative Care

Sudden deterioration, with the production or progression of circulatory collapse, is common in the immediate post-operative period and requires continuous supervision—in the theatre, on the way back to the ward, and in the ward—by someone experienced in resuscitation and able to take the decisive action required. Prompt clearing of the airway, oxygen, and the prevention of vomiting and inhalation by gastric suction may all be necessary. A small stomach-tube should be passed at the end of the operation if this has been unwisely omitted earlier. Circulatory failure or excessive haemorrhage calls for the immediate administration of plasma or whole blood.

Later Measures

In a straightforward case we have continued with intravenous saline for 6 to 12 hours after operation as a slow drip, meanwhile re-establishing fluid administration by mouth as described below. Where vomiting of dark-green fluid or faecal fluid occurs, hourly gastric suction and full replacement therapy by the parenteral route are employed until only clear fluid or nothing at all is obtained from the stomach for some hours. If 20–30 ml. of water is given orally after each aspiration an idea of the amount of absorption taking place can be obtained, and infection and soreness of the mouth and oesophagus are minimized.

In most cases fluid is given as sips of water as soon as the child has recovered consciousness, and 1 oz. (28 ml.) hourly is started within 5 to 6 hours after operation. This is increased to 2–4 oz. (57–114 ml.) two-hourly, according to the size of the baby, if no vomiting occurs, and milk feeds at two-hourly intervals can be started after 12 hours. If the child is breast-fed the mother is admitted and feeding started about 12 hours after the operation.

After 48 hours, if the bowels have been opened—with the help of a glycerin suppository if necessary—and feeds are being taken and retained, there is no need for continued stay in hospital, and early discharge is the rule. In most cases some degree of fever continues for several days, but it tends to subside steadily, and in our experience need not prevent the child from going home. The wound can be sealed off with "elastoplast" over a gauze dressing, and normally needs no further attention until the stitches are removed on the seventh or eighth day, which can readily be done at an out-patient visit. It is more satisfactory to have the child return to the hospital for a general examination and inspection of the wound than to have the dressing done at home, though the latter may be necessary if the home is too far away or travelling is difficult. The length of stay in hospital in uncomplicated cases is three days. Children with ileostomy or anastomosis, of course, require a longer period in hospital and special surgical care suitable to the nature of the operation.

Severe post-operative vomiting of obstructive type may be encountered, and is presumably due to a temporary ileus from oedema or haemorrhage into the bowel wall. Hourly gastric suction and adequate parenteral fluids may have to be continued for some days, but are usually effective. This is not the place to discuss the detailed measures required to maintain water-and-salt balance in such cases.

Use of Enemata, Alone or Combined with Surgery

Here we enter the difficult but important field of comparison. A careful study of the many accounts of acute intussusception written in the past 50 years reveals the disturbing fact that many of these are so lacking in precise information about age, the duration of the disease at the beginning of treatment, the length, character, and effect of pre-operative resuscitation, and the quality of anaesthetic and surgical skill employed that comparison is difficult and unprofitable. Further accurate recording of the time relationships in this disease is indispensable if we are to achieve a valid assessment in strictly comparable groups of cases.

Table V sets out our results in Newcastle-upon-Tyne beside a similar series treated by primary surgery in America. Table VI shows the results obtained by Hipsley (1937) in Australia, Nordentoft (1943) in Denmark, and

TABLE V.—*Mortality in Two Series Treated by Surgery Alone*

	Gibbs and Sutton, U.S.A. (1943)	Present Series
Period ..	1927–37, Group A; 1937–42, Group B	1944, Group C; 1945–6, Group D
Age	Infancy and early childhood	Infancy and early childhood
Length of illness at operation	Groups A and B: 64% within 48 hours, 21% over 4 days	Group C: 52% within 48 hours, 29% over 4 days Group D: 74% within 48 hours, 14% over 4 days
No. of cases ..	Group A, 55 Group B, 36	Group C, 27 Group D, 73
Mortality ..	42% 8%	15% 8%

TABLE VI.—*Mortality in Series Treated by Enemata and Surgery*

	Nordentoft		Hipsley		Nyborg	
Period	1928–35		–1937		1935–41	
Age			92% below 2 years		45% below 1 year	
	No.	Deaths	No.	Deaths	No.	Deaths
Treatment:						
Barium enemata ..	97	2%	—	—	40	0%
Saline enemata ..	—	—	60	0%	—	—
Enemata + laparotomy	100	23%	32	3%	35	8%
Primary operation ..	185	22%	50	10%	9	11%
Total	382	17%	142	5%	84	5%

Nyborg (1943) in Sweden, using reduction by enemata alone or combined with surgery. The excellent results obtained by Hipsley and Nyborg with the lowest recorded death rate in this disease would at first sight suggest that the combined approach is superior to primary surgical reduction. This is an important practical point, implying the need for the initial use of barium enemata in all early cases and the availability, whenever necessary, of staff expert in this technique.

A most careful reading of the three papers, however, suggests that the real factor responsible for the excellent results is less the therapeutic method employed than the high proportion of cases coming for treatment early in the disease. Nearly 90% of Nyborg's children had been dealt with in the first two days. In the larger group collected by Nordentoft this was not the case, and the combined results are less satisfactory than in cases treated by surgery alone. Although Hipsley does not give precise details of the duration in each case, the average in each of his three groups was 16, 17, and 24 hours, suggesting again that the majority of his cases were treated early in the disease. What is more, 84% of his deaths occurred in children who had had the disease from two to five days before treatment was carried out.

Table VII gives the main details of the ten Newcastle children who died. The factors which in our experience determine the outcome of this disease are the duration before treatment, the efficiency of pre-operative resuscitation, the age of the child, the anatomical type of invagination, and the degree of difficulty encountered in the surgical reduction.

TABLE VII.—*Detailed Analysis of Deaths in the Newcastle Series*

Case No.	Age	Duration of Disease	Type of Intussusception	Pre-operative Plasma	Time of Death after Operation	Probable Cause of Death
550*	7 mths.	4 days	Ileocolic	None	4 hours	Circulatory failure; cyst of vitello-intestinal duct removed at operation. No necropsy
582*	4 mths.	4 days	Ileocaecal	150 ml.	14 hours	Prolonged intestinal obstruction; extensive fatty change in liver; toxic changes in heart and kidneys
1239*	8 mths.	5 days	Ileocolic	Less than 100 ml.	15 hours	Prolonged intestinal obstruction; degenerative and fatty changes in heart, liver, and kidneys; pulmonary haemorrhage
1338†	8 mths.	3 hours	Caecocolic	150 ml.	30 hours	Lipoid pneumonia—aspiration. Death not directly due to intussusception
2887†	2 years	72 hours	Ileo-ileal	100 ml. (300 ml. saline)	24 hours	Circulatory failure; possible recurrence of intussusception
2835*	4 mths.	49 hours	Caecocolic	40 ml.	36 hours	Recurrent circulatory collapse; necrosis of caecal mucosa, pulmonary collapse
2956†	4 mths.	67 hours	Ileocolic	200 ml.	9 hours	Operation postponed for 24 hours; barium enema given; continued intestinal obstruction and circulatory collapse
3088*	7 mths.	5 days	„	240 ml. (100 ml. saline)	12 hours	Prolonged intestinal obstruction
3835*	3 mths.	33 hours	Ileo-ileocolic	200 ml.	48 hours	Progressive circulatory failure; inadequate response to pre-operative resuscitation; gangrene of gut–peritonitis
4149*	3½ mths.	45 hours	Ileocolic	170 ml.	5 hours	Progressive intestinal obstruction with relentless increase in distension

* Difficult reduction. † Easy reduction.

Summary and Conclusions

A detailed study is made of 100 cases of acute intussusception in children treated at Newcastle-upon-Tyne.

It is concluded that the mortality from acute intussusception can be substantially reduced only by its diagnosis and treatment within the first 24 hours.

The clinical features of this series of cases suggest that the traditional picture of the disease may require modification in the following details :

1. A considerable number of cases occur between 3 and 6 months of age.

2. Male predominance is not always present.

3. Spontaneous passage of blood from the bowel is often a late sign in terms of the period available for effective treatment.

4. In acute cases a sudden illness, occurring in a previously healthy child between 3 and 18 months old, characterized by recurrent abdominal pain and vomiting, especially when associated with pallor or collapse, should be regarded as intussusception and sent to hospital without delay.

5. The emphasis in diagnosis should be placed on the total history rather than on any individual physical signs. Though an abdominal tumour was felt in a high proportion of the cases in this series, the family doctor, seeing relatively few cases, should not wait for its detection. Rectal examination should never be omitted, as blood may be found in this way before its spontaneous escape from the bowel. The presence of fever is quite consistent with acute intussusception and should not lead to the delaying diagnosis of infective enteritis.

6. The outlook is mainly determined by the duration of the disease before treatment and the efficiency of pre-operative resuscitation. In expert hands, primary surgical reduction and hydrostatic pressure supplemented by surgery are both effective. There are certainly no grounds for a change from the surgical technique which has long been accepted in this country, though more expert supervision at all stages of the disease and operation by interested as well as experienced surgeons are desirable.

We are grateful to Professor J. C. Spence for his unfailing encouragement; to Drs. Swinburne, Walton, Whitehouse, and the late Dr. Sheriff for the very high standard of their case records, which alone made this study possible; and, lastly, to Dr. Whittingham for his help with the figures.

BIBLIOGRAPHY

Gibbs, E. W., and Sutton, P. W. (1943). *Surgery*, **14**, 708.
Hipsley, P. L. (1937). Ibid., **1**, 825.
Juillard, E. (1942). *Helv. med. Acta*, **9**, 63.
Kahle, H. R. (1941). *Amer. J. Surg.*, **52**, 215.
Ladd, W. E., and Gross, R. E. (1934). *Arch. Surg.*, **29**, 365.
Nordentoft, J. M. (1943). *Acta radiol., Stockh.*, **24**, 484.
Nyborg, S. (1943). *Acta chir. scand., Supp.* 80, **89**, 1.
Wakeley, C. P. G., and Atkinson, F. R. B. (1938). *Brit. J. Child. Dis.*, **35**, 241.

AN UNUSUAL CASE OF ADRENAL CARCINOMA

WITH A NOTE ON THE APPLICATION OF A NEW COLOUR TEST

BY

L. R. BROSTER, D.M., M.Ch., F.R.C.S.

AND

JOCELYN PATTERSON, M.Sc., Ph.D., F.R.S.Ed.

(From Charing Cross Hospital)

This case is recorded not only because it was unique in our series in having general clinical appearances of a typical Group I virilism associated with an adreno-cortical tumour instead of marked bilateral hyperplasia, but also because the later stages were accompanied by manifestations of disturbances in both carbohydrate and steroid metabolism of a particularly striking order. Moreover, the case afforded an opportunity of applying the urinary colour test recently devised by Patterson (1947) for distinguishing between adreno-cortical tumour and marked adrenal hyperplasia.

Case Report

The patient, a girl aged 14½ years, was kindly referred by Dr. H. B. Hayman, of Gloucester. He wrote : "She had been admitted to the City General Hospital, Gloucester, on April 20, 1947, with a four-months history of fits followed by coma. During the past 18 months she had become very hairy, the voice had deepened, her secondary sex characters had not appeared, and she had never menstruated. On admission she was semi-comatose, with a marked right-sided hemiplegia and all the signs of an upper-motor-neurone lesion. The latter completely disappeared within the next three days. She then developed epileptiform fits accompanied by incontinence of urine. Each fit lasted 30 minutes, with a return to normal. The fits then began to increase in frequency, with lengthening periods of unconsciousness.

"On examination her complexion was dark and the nipples pigmented. She was drowsy and her voice was deep. There was marked hirsuties, also a male pubic triangle. The clitoris was enlarged to the size of the tip of the little finger. The blood pressure was 120/85 and the cardiovascular system was normal. The central nervous system showed on the right side a seventh-nerve palsy, a dilated pupil, and an extensor plantar reflex. The eyes deviated to the left, with papilloedema more pronounced on the right side than on the left. A large tumour was present in the left hypochondrium. The cerebrospinal fluid and urine were normal, the blood urea was 25 mg. per 100 ml., and the sugar-tolerance test revealed marked hypoglycaemia, with blood-sugar figures following 50 g. of glucose ranging from 55 mg. per 100 ml. at 15 minutes to 70 mg. at 120 minutes, and the urine showing a trace of sugar."

On July 7, 1947, the patient was admitted into Charing Cross Hospital. She had that gnomish appearance typical of marked Group I virilism, with the figure of a boy rather than a girl. The chest was flat, the musculature well developed, with limbs short in proportion to the torso. During lucid periods the mentality appeared dull but psychologically feminine. The blood urea was 19 mg. and fasting blood sugar 35 mg. per 100 ml., haemoglobin 104%, and the 17-ketosteroid excretion 1,980 mg. a day—about 2½ times the highest level we have seen reported. The dehydroisoandrosterone test (Patterson: see Addendum) was strongly positive. *X*-ray examination showed calcified streaks in a large adrenal shadow, a normal pituitary fossa, and premature epiphysial fusion corresponding to the age of 20 or over. From the day of admission till July 20, when she died, there was a succession of fits, with stupor and recovery. The stupor would last as long as a whole day. At times she was irritable and incontinent, and on waking would eat ravenously. On July 13 she was roused temporarily by 2 minims (0.12 ml.) of adrenaline intravenously, and on the 14th from a deep stupor by 5 ml. of 50% glucose intravenously. On July 16 she was seen by Dr. Gardiner-Hill, who suggested that the hypoglycaemia was due to the unopposed action of insulin—the adrenal medulla being destroyed—and that she be put on a high-protein low-carbohydrate diet to avoid the further stimulation of insulin production. During the attack in which the blood sugar was estimated the value fell to 15 mg. per 100 ml. (Hagedorn and Jensen method). There was no return of any central nervous symptoms, except that during July 19 and 20 the pupils began to dilate with the head turned to the right, and the temperature began to rise.

At necropsy the left adrenal tumour together with attached kidney weighed 6 lb. 8 oz. (2.98 kg.). The thyroid gland was enlarged, the pituitary was normal, and there was no evidence of any secondary deposits.

Report on the Tumour

The following are the findings of Prof. Willis, of the Royal College of Surgeons, with regard to the adrenal cortical tumour.

"*Gross Description.*—The left adrenal tumour is rounded, well circumscribed, measures 22 cm. in main diameter, and weighs nearly 6 lb. (2.72 kg.); it consists of almost fluid degenerated and haemorrhagic material, with only a thin rim of living tumour tissue in places. The kidney and also the other pieces of organs submitted (liver, spleen, thyroid, right adrenal, uterus and ovaries, and pancreas) show no obvious abnormalities, except for marked post-mortem changes.

"*Microscopical Description.*—The adrenal tumour consists of large, rounded, and irregular cells of variable size, irregularly arranged in masses and trabeculae and showing extensive areas of degeneration. The structure is that of a malignant adrenal cortical tumour, although mitotic figures are not numerous. Spleen, adrenal, kidney, pancreas, liver, ovary, and thyroid show pronounced congestion and post-mortem changes (especially in the pancreas and kidney) and scattered large bacilli which are probably post-mortem invaders. Other noteworthy points are : kidney shows patchy areas of calcification in both the cortex and medulla ; post-mortem changes in pancreas are so advanced that islet tissue cannot be distinguished ; ovary contained abundance of healthy primary and vesicular follicles ; and thyroid shows a mild degree of colloid retention."

Discussion

Clinically the patient did not show such an advanced degree of virilism as other cases of similar age group in our series where the underlying pathology was due to pronounced adrenal hyperplasia. Nevertheless, the 17-ketosteroid excretion was 20 to 50 times that commonly found in the latter group. This finding makes the case a notable example of gross discrepancy between clinical manifestations of virilism and the 17-ketosteroid excretion.

It is also a matter of interest that the opposite adrenal was present. This seems to conform to the rule that in heterosexual virilism both adrenals are invariably present, whereas in isosexual precocity the carcinoma may arise in a solitary adrenal. We have experienced the latter combination on three occasions: two boys, one with a tumour imbedded under the right lobe of the liver and one with a huge tumour of the left adrenal ; and a girl, also with a huge tumour on the left side, with an androgen excretion of 260 mg. a day, who was being treated concurrently with the present case. These patients are of the fat, ruddy-complexioned type, more akin to Cushing's syndrome.

Some of the difficulty of correlating clinical manifestations with 17-ketosteroid output undoubtedly arises from differences in the type of androgen secreted. Crooke (1946) puts forward the view that the association of adreno-genital tumours with virilism in some instances and with basophilism in others might be accounted for on the theory that the androgenic steroids of the first type are derived from incompletely elaborated hormones, whereas in the second type they derive from vital hormones, and that it

is the excess of these vital hormones which produces atrophy of the opposite adrenal. As Crooke points out, this likewise would help to explain the occasional incidence of Addison's disease in some children of Group I virilism due to bilateral hyperplasia if it be assumed that large amounts of abnormal androgens are being produced at the expense of vital hormones.

The present case, so far as carbohydrate metabolism is concerned, comes more into line with certain cases of Addison's disease than with cases of virilism, in which the tendency is in the direction of lowered sugar tolerance. With one adrenal apparently normal, the destruction of the adrenal medulla by the tumour would hardly seem sufficient cause in itself for the marked hypoglycaemia.

In view of the exceptional rate of secretion of androgenic steroids it cannot be excluded that these may have suppressed the anti-insulin action of the right adrenal without causing an atrophy of the gland such as would be expected if the tumour was of the type producing vital hormones.

Some of the present perplexities in this field will most likely be resolved when more clues to the differences in the androgens in clinically distinctive groups are available. The introduction of the relatively simple qualitative dehydroisoandrosterone test is an important step in this direction. As a test of malignancy the potentialities would seem to be not less than those of such acknowledged diagnostic aids as the gonadotrophin assays for chorion epithelioma and the serum acid-phosphatase estimation applied to prostatic carcinoma.

Addendum.—The dehydroisoandrosterone test referred to above is applied to the type of urinary extract used for 17-ketosteroids. The dry extract is first treated with concentrated sulphuric acid at 25° C. for 20 minutes, the solution diluted with an equal volume of water while being kept cold, and then heated for one minute in a boiling-water bath. A blue or blue-violet colour developing in the final stage indicates the presence of excess dehydroisoandrosterone and its closely related steroids in the extract—a feature of tumour urine extracts but not of the corresponding urinary extracts for cases of adrenal hypertrophy.

In the case described the distinct reaction was readily obtained even when the amount of extract used was reduced to the equivalent of no more than 0.1 ml. of original urine.

Summary

A case is described in which a new test for carcinoma of the adrenal gland has been established.

This test differentiates carcinoma from hyperplasia.

Gross abnormalities of metabolism were present in the terminal stages of the condition.

REFERENCES

Crooke, A. C. (1946). *Proc. R. Soc. Med.*, **39**, 516.
Patterson, J. (1947). *Lancet*, **2**, 580.

Unlike the doctors and dentists, pharmacists welcomed the new National Health Service Act, said Mrs. J. K. Irvine, president of the Pharmaceutical Society of Great Britain, speaking in Edinburgh on April 2. Subject to satisfactory terms of service and remuneration they were prepared to take their part in the new service. Under the Act pharmacy became a complete public service applying to the whole population. The new service was going to change pharmacy just as much as the medical benefit part of the Act of 1911 had revolutionized the pharmacy of that day. Pharmacy welcomed the Act because it put an end to the dispensing doctor. Practically all the dispensing would be done by pharmacists. It meant the complete separation of prescribing and dispensing. Pharmacy, so far, was taking the Act on trust, because as yet they had little idea of the terms of service or the remuneration. They hoped that trust would be justified, for the time was now short for any extended or controversial negotiations with the Minister of Health.

ADRENAL FEMINISM DUE TO CARCINOMA OF THE ADRENAL CORTEX

A CASE REPORT AND REVIEW OF THE LITERATURE

BY

C. N. ARMSTRONG, M.D., F.R.C.P., D.P.H.

AND

JOHN SIMPSON, M.D., M.R.C.P.

(*From the Royal Victoria Infirmary, Newcastle-upon-Tyne*)

Feminism can be defined as the development of female characteristics in a male. This is usually manifested as a feminine distribution of subcutaneous fat and gynecomastia, often with testicular atrophy and a feminine type of hair distribution. We do not consider that syndromes associated with the failure of development or regression of primary or secondary male characteristics alone as feminism.

Parkes Weber (1926) describes gynecomastia as a rare occurrence in hypogonad states, whether this hypogonadism be primary and possibly due to pituitary insufficiency, or secondary following disease or trauma of the testes. He quotes some remarkable cases, including unilateral gynecomastia following injury or disease of the testes which has itself sometimes been unilateral. Cases of gynecomastia after castration and prostatectomy have been described in the literature. Very rarely, gynecomastia occurs in chorion epithelioma of the testes. Gynecomastia has been reported amongst men engaged in the handling and packing of oestrogen preparations, and has been seen in cases of advanced liver disease, apparently due to the failure of the liver to carry out its role of detoxicating the normally occurring oestrogens.

The most striking group, however, comprises those cases with an adrenal origin. Seven cases of feminism due to carcinoma of the adrenal cortex have been reported—the one described below is the eighth. Broster also describes feminism in cases of hyperplasia of the adrenal cortex, and has performed unilateral adrenalectomy, with improvement. Roholm and Teilum (1942) also discuss the possibility of such a hyperplasia causing feminism.

Review of Recorded Cases

It is with the clinical picture of feminism due to adrenal neoplasm that this paper is concerned. The first case was described by Bittorf in 1919, and since then Parkes Weber (1926) and zum Busch, Holl (1930 ; 2 cases), Lisser (1936), Simpson and Joll (1938), Roholm and Teilum (1942) have published cases. The ages of the eight patients were 15, 26, 27, 33, 34, 40, 44, and 44. The presenting symptom varied in the series: five out of the eight had gynecomastia and complained from the onset of swelling or pain in the breasts ; the remainder of pain, discomfort, or a lump in the upper abdomen—i.e., of the causal neoplasm. In three cases there were also reduction in size of the external genitalia—penis, testicles, or both—and loss of libido or potency. Our patient complained of loss of weight and of sweating—and Holl's second patient of obesity. Haemoptysis due to secondary deposits occurred in one case.

Clinical examination revealed gynecomastia in all cases, varying in degree from "as in a girl" to "feminine" size and appearance. Holl's second case had great tenderness. The breasts are described as being nodular or "glandular" to palpation. Holl and Lisser recorded secretions from the nipples. Pigmentation of the areola and hypertrophy of Montgomery follicles are also mentioned. In four of the

cases the penis and testes were small, and testicular atrophy in some instances was extreme—the "size of a pea" (Bittorf). Two authors reported the genitalia as "normal," two others made no mention of their state. A varicocele occurred in two cases on the same side as the adrenal tumour. Secondary sex characters seemed to show little changes, and most cases had a normal masculine hirsuties, although in two instances the beard area was described as becoming softer. In a 15-year-old boy there was no facial hair, and the pubic hair was described as transverse female type. In Bittorf's case the voice was high-pitched, but there had been no recent change. Holl, who recorded acne and dilatation of skin veins in one of his cases, was the only author to describe changes in the skin.

The general nutrition and body weight were normal in four of the cases, Holl's second case was grossly obese, and Simpson and Joll's (1938) case gained weight before becoming emaciated. Two cases had lost weight. Facies is described in only three of the cases—two as being "soft" (one patient changed so greatly that his acquaintances failed to recognize him), and the third (our case) as normal. There was a loss of libido and potency in three cases; the patients seem to have become sexually indifferent. The development of homosexuality is not recorded. A palpable abdominal mass or "fullness" was present in all cases, and in all but one was left-sided. Two cases showed increased pigmentation of the skin, in two it was absent, and in the remainder it was not commented upon. Blood pressure was normal where it was recorded.

Pyelography was carried out in four cases, and in each there was depression downwards of the kidney, and in some there was rotation. Two radiologists observed a mass above the kidney. The single glucose-tolerance curve in the series revealed an impaired tolerance to glucose. No basal metabolic rate estimations have been recorded. *X*-ray examination of the skull and sella turcica, when made, was normal.

Estimations of oestrogens and androgens were recorded in three cases: all showed moderate excess of androgens, and in the two cases investigated gross excesses of urinary oestrogens were found, as follows:

Simpson and Joll.—Androgens: comb-growth capon units, 25-100 per litre (normal, 8-25). Oestrogens: 100-6,400 M.U. per litre (normal, 20). Aschheim-Zondek test negative.

Roholm and Teilum.—Androgens: 54-164 C.C.U. (normal, 8-25). Oestrogens: 750-8,000 M.U. (normal, < 20). Gonadotrophin: 30-50 R.U. (normal, < 30).

Armstrong and Simpson.—Ketosteroids: May, 1942, 34 mg.; November, 1942, 108 mg. (normal 6-23 mg. in 24 hours).

Treatment.—In two of the four cases operated upon nothing could be done (Armstrong and Simpson; Holl, Case 1). In Simpson and Joll's case the tumour was removed, but the patient died from secondary deposits. Holl's second patient was operated on successfully by Hertle, and 12 months later was still alive and well, showing no evidence of secondary deposits.

Course.—In five cases the condition ran its course in a few months, the patients dying of cachexia and secondary deposits. In Simpson and Joll's case the duration was three years and in Roholm and Teilum's case five years. Holl's case remains unique as a possible cure. The younger patients have all died quickly; the older group survived longer.

Post-operative Results.—Holl's patient regained his masculine appearance; his penis and testes became larger; libido and potency returned. The breasts, which had become very tender and congested, rapidly became painless and soft, pigmentation disappeared, and when last seen they were still getting smaller. Simpson and Joll's patient gained weight, the breasts became smaller, the genitalia larger, and there was a partial return of libido and potency. This was only temporary, and he redeveloped all his symptoms owing to secondary deposits.

Pathology.—All cases have been due to malignant adrenal tumour arising in the adrenal itself, except in Lisser's case, which arose from an adrenal rest. All metastasized except Holl's second case. Metastases have occurred in lungs, bones, liver, lymph nodes, and the opposite adrenal.

Case Report

The patient, a policeman aged 40, was admitted to hospital in February, 1942, complaining of pain below the left costal margin, night sweats, and loss of weight. Examination revealed a tender mass closely resembling a spleen protruding two finger-breadths below the left costal margin. The patient was of good physique and showed no signs of loss of weight. Whilst in hospital he ran a low-grade intermittent pyrexia. Splenomegaly was suspected, but full investigation revealed no clear cause for the pyrexia or the "splenomegaly." He was discharged home and told to report to the out-patient department in two months. When seen again in May, 1942, he complained of a pain in the right breast, and was found to have developed bilateral gynecomastia. On his readmission to hospital it was observed that the pain in the left side of the abdomen had worsened and now radiated to the left hip. He was then investigated as a possible case of adrenal neoplasm.

On examination the patient was of normal bodily contour, with no obesity or feminine distribution of fat. The facies and hair distribution were normal for an adult and had shown no recent change. To external examination the genitalia also appeared normal. There was no abnormal pigmentation. A well-marked bilateral mammary swelling could be felt, due to the presence of nodular glandular tissue. Clinical examination of the cardiovascular and respiratory systems revealed nothing of note; the blood pressure was 128/88. The central nervous system was normal, and urinalysis showed nothing abnormal. Haematological investigation revealed a slight hypochromic anaemia. The leucocyte count varied between 7,500 and 12,300 per c.mm., and there was a slight absolute lymphocytosis. The Wassermann reaction was negative.

Routine chest radiography showed a "possible calcified primary complex, but no evidence of recent disease." The report on the intravenous pyelogram read: "Right pyelogram normal; left kidney seems to be displaced downwards and laterally, ? due to mass"; and the retrograde pyelogram: "No abnormality of pelvis or calices of left kidney, but the kidney is displaced downwards and laterally. Right side, *nil*."

17-ketosteroid investigations gave the following 24-hour results: May 22, 34 mg.; Sept. 30, 108 mg.

At laparotomy on June 17 Mr. T. A. Hindmarsh found a large adherent and necrotic tumour above the left kidney. Because of the vascularity of the tumour mass, its size, and extensive adhesions, no attempt was made to remove it. Subsequently the patient deteriorated rapidly; he became emaciated and jaundiced, he developed ascites, and his liver became enlarged and nodular. Death occurred during November, 1942, some eleven months from the onset of his symptoms. There was a terminal haematuria.

Abstract of Dr. J. G. Thomson's Necropsy Report

The body is of a well-developed but poorly nourished subject; there is deep jaundice. The breasts are larger than normal in a male and measure 7.5 by 8 cm., with a maximum thickness at nipple level of 1 cm. The nipples are prominent, free from hairs, and measure 0.7 cm. in diameter. Hair on the trunk shows the normal masculine distribution.

Internal Examination:—Lying above the left kidney, which is compressed and distorted but nowhere invaded, is a large lobulated tumour measuring 17 by 13 by 19 cm. It appears to be well encapsulated, and section reveals that the tumour mass is divided into lobules 3.5 cm. in diameter by fibrous septa. Approximately three-quarters of the growth is haemorrhagic or yellow and necrotic; the remainder is pink in colour and soft in consistency. No left adrenal is recognizable.

Secondary deposits are present in both lungs; they are mainly small, and measure up to 2.5 cm. in diameter (the left lung

has six secondary deposits, the right has eight). The liver is enormously enlarged to 8,010 g. by secondary deposits up to 7 cm. in diameter, most of which show extensive yellow foci of necrosis. An isolated secondary deposit is present in the twelfth thoracic body, and the first and second lumbar bodies are diffusely infiltrated by tumour. The breasts are readily separated from the surrounding tissues, and the left, without nipple, weighs 28 g.; section shows it to consist of firm fibrous tissue. The prostate is normal in size and appearance. The testes are not significantly reduced in size; they measure 4 by 2.5 by 2 cm. (with epididymis) and together weigh 28 g. The cut surfaces are brownish and atrophic.

The following organs show no obvious abnormalities: thyroid, pituitary, right adrenal, spleen (240 g.), brain (1,310 g.), heart (208 g.), and right kidney.

Histology.—This confirms the adrenal origin and carcinomatous nature of the tumour. Differentiation varies a great deal and nuclear irregularities are frequent, but even in the secondary deposits resemblances to adrenal cortical cells in nucleus and the lipoid content of the cytoplasm are retained to a varying degree. Necrosis is everywhere a prominent feature, and in the sections studied half the tumour is necrotic. Whilst a fair degree of resemblance to adrenal cortical cells is present the picture nowhere approximates to that of the adrenal cortex or of a well-differentiated cortical adenoma, and in particular the normal relationship of cortical cells to sinusoids is nowhere evident. *Testes* show early atrophic changes with marked fibrous thickening of the walls of the tubules, diminution of the cellular content, and an increase of wear-and-tear pigment in the interstitial cells. *Breasts* show dilated ducts containing protein material and cells, and abundant glandular tissue, producing a picture not unlike that of a female breast.

Comment

Acquired feminism due to carcinoma of the adrenal cortex causes a well-defined syndrome of gynecomastia, abdominal tumour, atrophy of the external genitalia, and loss of libido and potency. The condition is rapidly fatal, especially in the younger patients. Biochemically there are a moderate excess of urinary androgens and a gross excess of oestrogens. A most striking feature is the invariable presence of a palpable abdominal tumour.

The possibility that feminism might be due to hyperplasia of the adrenal cortex has been suggested by Broster and Vines (1933), who have clearly shown that virilism can be due to hyperplasia of the adrenal cortex as well as to carcinoma or adenoma. They consider that, similarly, feminism may be due to hyperplasia of the adrenal cortex. Roholm and Teilum (1942) also discuss this possibility.

In our clinic we are investigating cases of hypogonadism, with or without gynecomastia, and are considering hyperplasia of the adrenals as a possible aetiological agent.

Summary

The condition of feminism is defined and discussed.

The eight reported cases due to carcinoma of the adrenal cortex are analysed in detail.

A clinical report and necropsy findings of a case of feminism due to carcinoma of the left adrenal are described.

Our thanks are due to Dr. J. G. Thomson, of the Department of Pathology, for the report on the necropsy and the histological findings, to Dr. Freda K. Herbert for the 17-ketosteroid investigations, and to Dr. S. Whately Davidson for the radiological reports.

BIBLIOGRAPHY

Bittorf, A. (1919). *Berl. klin. Wschr.*, **56**, 776.
Broster, L. R., and Vines, H. W. C. (1933). *The Adrenal Cortex.* Lewis, London.
Cahill, G. F., *et al.* (1936). *Surg. Gynec. Obstet.*, **62**, 287.
Glass, S. J., and Bergman, H. C. (1938). *Endocrinology*, **23**, 625.
Holl, G. (1930). *Dtsch. Z. Chir.*, **226**, 277.
Kenyon, A. T., *et al.* (1937). *J. clin. Invest.*, **16**, 705.
Lisser, H. (1936). *Endocrinology*, **20**, 567.
Mathias, E. (1922). *Virchows Arch.*, **236**, 446.
Patterson, J., *et al.* (1942). *British Medical Journal*, **1**, 35.
Roholm, K., and Teilum, G. (1942). *Acta med. scand.*, **111**, 190.
Simpson, S. L., and Joll, C. A. (1938). *Endocrinology*, **22**, 595.
Weber, F. Parkes (1926). *Lancet*, **1**, 1034.

IDIOSYNCRASY TO *d*-TUBOCURARINE CHLORIDE

BY

T. CECIL GRAY, M.D., D.A.

AND

JOHN HALTON, M.B., Ch.B., D.A.

(From the Department of Anaesthesia, Liverpool University)

Since first introducing pure *d*-tubocurarine chloride as an aid to anaesthesia it has been clear to us that patients show a marked variability in their reactions to average clinical doses of this substance. The following factors are known to influence the individual response.

Age.—As with most drugs, the administration of *d*-tubocurarine chloride must be made with caution in the extremes of age. Children up to the age of puberty tolerate the drug well provided that a dose-for-weight ratio (2 mg. per stone (6.35 kg.) body weight) is used. The aged, on the other hand, show a varying susceptibility, and some patients past the allotted span have required as much *d*-tubocurarine chloride as their lusty brethren in the prime of life.

Body Weight.—In so far as it bears a relation to muscle mass—e.g., in children—this is a useful guide to dosage, but in adults a maximum initial dose of 15 mg. should not be exceeded. It is, however, a general rule for the muscular well-developed patient to tolerate *d*-tubocurarine chloride well.

Physical Condition.—The dosage must be modified considerably in cachectic and feeble patients.

Drug Tolerance.—There is clinical evidence to show that patients who show a natural or acquired tolerance to the opiates and barbiturates tend to require a larger dose of *d*-tubocurarine chloride than normal.

Some authorities would modify the dose in the presence of certain anaesthetic agents, ether in particular. In our opinion it is preferable to reduce the amount of the toxic anaesthetic agent.

These, then, are the salient factors upon which the initial dosage of this drug is computed, but they do not account for all the variations. Minor variations in reaction on either side of normal are often seen, and the following two cases demonstrate very clearly that this variability may be of serious degree and consequence.

Case 1

The patient, a man aged 40, was admitted to hospital with an obstructive lesion of his main bronchus. He was losing weight and had a cough with repeated haemoptysis. Five days before the present examination a bronchoscope had been passed under local analgesia, but it was decided to repeat the examination and carry out a biopsy. The following sequence of events took place.

1 p.m.—Anaesthesia was induced with *d*-tubocurarine chloride, 15 mg., and thiopentone, 0.5 g., and respiratory arrest ensued. The lungs were inflated with oxygen, and bronchoscopy was performed. On bronchoscopy the picture was that of an inoperable carcinoma of the bronchus. Owing to the non-return of respiration the surgeon was asked not to take a biopsy. The examination was speedy and at no time was the patient deeply cyanosed, oxygen being insufflated through the side tube of the bronchoscope and artificial respiration performed whenever he went a little "off colour." At the close of the examination there was no sign of any respiration and the patient appeared to be more than usually relaxed and flaccid. An airway was introduced, a facepiece applied, and artificial respiration maintained by manual compression of the rebreathing bag of a closed-circuit anaesthetic machine.

After 30 Minutes.—"Prostigmin," 5 mg., and atropine, 1/50 gr. (1.3 mg.), were given intravenously. No effect of this was observed. The patient continued in apnoea.

After 60 Minutes.—The dose of prostigmin and atropine was repeated. Following this a little diaphragmatic respiration became evident. Within ten minutes, however, these slight respiratory efforts had ceased.

After 105 Minutes.—A further dose of prostigmin and atropine was administered with a very similar response, the respiration being temporarily stimulated but fading off after ten minutes.

After 165 Minutes.—The dose of prostigmin and atropine was repeated, and this time the slight diaphragmatic response was maintained. The general condition of the patient had remained excellent throughout, and the pulse and blood pressure were normal.

After 180 Minutes.—The patient was in good condition and was showing evidence of continued diaphragmatic respiration.

After 195 Minutes.—Blood-stained fluid was regurgitated from the stomach and some entered the air passages. Bronchoscopy was carried out without delay and as much fluid as possible was aspirated from the bronchial tree. The patient's blood pressure was 150/75 and his pulse rate 90 a minute, but from this time his condition began to deteriorate and for the first time cyanosis became a feature of the case, tending to increase despite vigorous artificial respiration with oxygen.

After 270 Minutes.—The pulse was of poor volume and the blood pressure had fallen. Ephedrine, 1½ gr. (0.1 g.), was administered intravenously and slight improvement followed. The respiratory function was now practically in abeyance.

After 285 Minutes.—Nikethamide, 4 ml., was given intravenously, with a resultant transient improvement in the general condition. But circulatory failure was supervening.

After 300 Minutes.—The cyanosis had increased and the patient was now grey. Nikethamide, 4 ml., was repeated.

After 311 Minutes.—The pulse was imperceptible, and despite all efforts the patient died at 6.14 p.m., 314 minutes after the induction of anaesthesia.

Necropsy.—A very extensive carcinoma of the left main bronchus was found, and this rendered the whole of the left lung practically functionless. The right lung showed evidence of the aspiration of a large amount of blood-stained fluid which had undoubtedly reduced the aerating surface of this sole remaining lung below the minimum required for sustaining life. The stomach and intestines showed numerous small and recent punctate haemorrhages. These were not evident in the duodenum or in the large bowel. It was the blood from these which had been regurgitated from the stomach. Nothing else was found. There was no evidence of a persistent or enlarged thymus.

Remarks

This most severe case of hypersensitivity to *d*-tubocurarine chloride might not have been fatal had the possibility of regurgitation been anticipated and suitable precautions taken on the institution of artificial respiration. Before this accident the patient was apparently recovering and a fair degree of diaphragmatic respiration had returned. The necropsy was performed within three hours of death, and the haemorrhages of the gastro-intestinal tract were clearly of recent origin. The condition of the intestines bore a close resemblance to that discussed by Cole (1946) in his experiments performed on dogs to find a lethal dose of *d*-tubocurarine chloride. There was no suspicion or evidence of any myasthenic element in this case.

In view of this misfortune it was decided to give all patients a trial dose, namely, one-third of that estimated as necessary for the induction. That this was a wise precaution is amply confirmed by the sequence of events in Case 2.

Case 2

A woman aged 40 was found to be suffering from pulmonary tuberculosis in May, 1943. At no time had she complained of any symptom or shown any sign of myasthenia gravis, but she stated before operation that she had always reacted badly to drugs, especially to analgesics and opiates. Apart from the tuberculous disease of the right lung her condition was good and her blood picture normal. She was presented for a first-stage thoracoplasty on the right side. After premedication with morphine, 1/6 gr. (11 mg.), and atropine, 1/150 gr. (0.43 mg.), one hour previously, *d*-tubocurarine chloride, 6 mg., was administered.

After 1 Minute.—The patient had become completely curarized and all respiration had ceased. A pharyngeal airway was introduced and the facepiece of a closed-circuit anaesthetic machine applied. The lungs were inflated with oxygen.

After 2 Minutes.—Thiopentone, 0.3 g., was injected and the patient was placed in the thoracoplasty position. The operation was started and the anaesthesia was maintained with a 50% mixture of oxygen and nitrous oxide.

After 45 Minutes.—Her respiratory efforts returned and the diaphragmatic contractions gradually increased in amplitude. The anaesthesia was perfectly satisfactory throughout the procedure, but there was more than the usual amount of haemorrhage.

After 130 Minutes.—The operation was completed. The respiratory excursion was now much improved, but it was still inadequate. Prostigmin, 5 mg., and atropine, 1/50 gr. (1.3 mg.), were administered intravenously. This produced an immediate effect. All the reflexes were present when the patient left the table and she was fully conscious and co-operative ten minutes after arriving in the ward.

Further Progress.—The patient developed some basal consolidation accompanied by rusty sputum, but this cleared quickly and her convalescence was otherwise uneventful. On inquiry she stated that after the injection of *d*-tubocurarine chloride she felt "like a fish out of water"—as if she could not breathe. She could just remember the beginning of the injection of thiopentone.

Four weeks later she was presented for her second stage. The premedication was as before, and it was decided to follow the same regime as on the previous occasion in order to confirm the hypersensitivity. A test dose of 5 mg. of *d*-tubocurarine chloride was administered. The following sequence of events took place.

After 1 Minute.—There was complete ptosis of the eyelids and she was quite unable to raise them.

After 1 Minute 5 Seconds.—Her respirations were gasping and her pulse rate 130 a minute. She was showing signs of distress, and 0.3 g. of thiopentone was injected, the facepiece applied, and artificial respiration begun.

After 3 Minutes.—The facepiece was now accurately in position and the administration of a mixture of nitrous oxide and oxygen (25%) was started.

After 5 Minutes.—Manual full inflation of the lungs was met by a slight resistance at the end of the "stroke."

After 9½ Minutes.—There was some diaphragmatic flutter with slight arm movements; 0.2 g. of thiopentone was administered.

After 14 Minutes.—The respirations were regular but the tidal volume was small. The pulse rate was 80 a minute.

After 25 Minutes.—The respirations were still regular but small in volume and tending to be grunting. Pulse rate, 80 a minute.

After 43 Minutes.—The operation was terminating. Prostigmin, 3.5 mg., and atropine, 1/50 gr. (1.3 mg.), were administered. An immediate effect was observed.

After 45 Minutes.—The patient was coughing and groaning. All her reflexes were present and she was practically conscious on return to bed. This time the post-operative course was uneventful. There was no urinary disturbance or melaena.

This patient had a third-stage thoracoplasty two weeks later. The dose of *d*-tubocurarine chloride was reduced to 2 mg., which again produced complete ptosis and respiratory arrest, which this time lasted for five minutes.

Remarks

The hypersensitivity to *d*-tubocurarine chloride shown by this patient on the occasion of her first operation was confirmed and placed beyond all possibility of reasonable doubt at the second and third operations. The difference between the dosage (1 mg.) accounted for the slightly less

severe reaction on the second occasion. It is interesting to speculate what would have happened if a preliminary small dose had not been administered.

Neither of these cases gave any history or symptom suggestive of myasthenia gravis, and the second has since been examined most carefully without disclosing any sign of this disease.

Discussion

For reasons which have been repeatedly stressed (Gray, 1947) we consider that *d*-tubocurarine chloride should be given before the induction of anaesthesia, and these two cases further urge the importance of this observation. But it is clear that the primary administration of this drug, whether at induction or during the course of an operation, should always be preceded by a trial dose not exceeding 5 mg. for the healthy adult. Its effects should be observed for at least two minutes before proceeding with the further administration. In the conscious patient a "normal" reaction to the trial dose is evidenced by a sensation of lassitude and fatigue and difficulty in keeping the eyes open; very rarely there may be a slight and transient diplopia.

Any ptosis that occurs should still be under voluntary control. If it is not, or if there are other signs of a more than usually severe reaction—e.g., persistent diplopia, dysarthria, or dysphagia—any subsequent dose should be reduced significantly. It does not need to be emphasized that if there is respiratory embarrassment after this small dose (Case 2) further administration should be abandoned.

Summary

The factors controlling the dosage of *d*-tubocurarine chloride are reviewed and two cases of extreme hypersensitivity are described; the advisability of the preliminary administration of a trial dose is stressed.

References

Cole, F. (1946). *Anesthesiology*, **7**, 190.
Gray, T. C. (1947). *Ann. roy. Coll. Surg. Engl.*, **1**, 191.

Medical Memoranda

Perforation of the Posterior Fornix and Pouch of Douglas during Coitus

The following case is presented because of the rarity of this type of injury.

Case History

The patient, a woman aged 57, had had eight children, the eldest being 37 and the youngest 15. She had travelled to the hospital by bus, and was seen at the receiving room. The history was that whilst having intercourse about one hour previously she experienced a sharp pain in the vagina and had since been bleeding slightly per vaginam. At the same time she felt a dull ache in the lower abdomen and this had persisted. Since the birth of her last child she had not menstruated. Intercourse had last been indulged in about twelve months previously.

On inspection the patient was pale and apprehensive but was not shocked. The pulse was 86, temperature 97.4° F. (36.3° C.), respirations 18, and blood pressure 110/80. The lower abdomen was resistant but not rigid. There was some tenderness over the hypogastrium. Vaginal examination revealed that there was a transverse tear in the posterior fornix about 1½ in. (3.75 cm.) in length, and a loop of intestine was felt to be lying in the wound. There was a trickle of blood from the vagina. She was placed in the left lateral position and a Sims speculum inserted. The vault of the vagina was inspected, and a loop of small intestine was seen to be prolapsed through the tear.

During the examination the patient suddenly collapsed. She became grey, the pulse was almost imperceptible, and the blood pressure fell to 50/0. The examination was discontinued, and within a few minutes she recovered and the blood pressure rose to its former level.

In view of the unusual type of injury and the possibility of its having been caused by an instrument of some sort, exploratory laparotomy was performed, the abdomen being opened by a midline incision. About 3 to 4 oz. (85 to 114 ml.) of blood was found in the pouch of Douglas, but there was no bleeding-point. The intestines were undamaged. The tear in the pouch of Douglas was not visible but was easily found with the finger. The uterus was small and anteverted, and both ovaries were healthy. They were not unduly atrophic.

The blood was mopped up and a drainage-tube inserted through the rent in the pouch of Douglas into the vagina. It was secured to the posterior wall of the uterus by one stitch of No. 0 catgut. The abdomen was then closed in the usual manner. A prophylactic course of penicillin and sulphonamide therapy was started after operation, and apart from a slight "spike" on the second night the patient remained apyrexial. Nothing drained from the drainage-tube, which was removed on the third day. Vaginal examination on the 18th day revealed a transverse scar in the posterior fornix. Convalescence was complicated by a stitch abscess, and the patient was discharged from hospital on the 23rd day.

A few days after operation she gave further details of the mishap. Her partner was not her husband but a man aged 30. She insisted that normal coitus had taken place in the dorsal decubitus position, and that no bizarre or unusual practices had been indulged in. She stated that her partner had been very excited, and she thought he had used too much force.

Discussion

Minor injuries of the vaginal introitus due to defloration are not uncommon, and these occasionally require medical attention. More serious injuries of the vagina are rare, and Neugebauer in 1899 collected from the world literature 159 cases of injuries to the vagina sustained during coitus. Thirty-eight of these showed a posterior fornix injury. Since then four more cases of injury to the posterior fornix have been reported.

Of these 42 cases only four had the pouch of Douglas opened, and only one of these four had a prolapsed loop of intestine. Three of the four cases occurred in raped children, two being 8 years old and one 15 years old. All three patients died—two being murdered, and one dying of generalized peritonitis. The fourth case, reported by Fischer (1928), occurred in a woman of 26 who had had both ovaries removed for inflammatory disease some years previously. This patient recovered after laparotomy. The common factor in all the cases was a thin vaginal wall, due either to post-menopausal atrophy or to pre-pubertal immaturity.

The condition probably never occurs in a normal woman of child-bearing years, and should such a patient show a rupture of the pouch of Douglas one should bear in mind the probability of an instrumental injury due either to an attempt to procure abortion or to unusual sexual practices.

My thanks are due to Mr. Lewis Graham for his helpful advice in the management of this case, and to Dr. H. Nocholds and Mr. Alistair Gunn for permission to publish the case history.

S. LASK, M.B., Ch.B.

References

Fischer, E. (1928). *Zbl. Gynäk.*, **52**, 2754.
Neugebauer, F. (1899). *Mschr. Geburtsh. Gynäk.*, **9**, 221.

A Century of Public Health is the title of a small brochure which is being circulated abroad by the organizers of the Public Health and Municipal Engineering Congress and Exhibition which will be held at Olympia, London, from Nov. 15 to 20. The brochure traces progress from Edwin Chadwick and the first Public Health Act in 1848 to the present time. It attributes the substantial progress made first to the awakening of the social conscience and political instincts of the nation, and then to the advancement of science and the native skill and ingenuity in engineering. "For many years now," the writer states, "behind the public conscience there has been the forceful backing of engineers and industrialists eager to direct their knowledge, skill, and resources to the improvement of the public health and municipal engineering services. Nowhere else in the world was the ground more favourable for development; here was a highly industrialized country well in the van of progress in civil, mechanical, and electrical engineering and well equipped to adapt itself to the needs of the crowded communities which industry itself was creating." It is ten years since the last Public Health Congress and Exhibition were held in Britain, and the industries which exist largely for the public health and municipal engineering services will have many new developments to show.

Reviews

TUMOURS

Pathology of Tumours. By R. A. Willis, D.Sc., M.D., F.R.C.P. (Pp. 992; 500 illustrations. £3 3s., postage 1s. 6d. extra.) London: Butterworth and Co., Ltd. 1948.

This new book—indeed a *magnum opus*—will be welcomed not only by pathologists, to whom it will prove an indispensable aid beside the microscope, but as a work of reference by clinicians and all who are interested in tumours. In scope and format the volume superficially resembles the well-known *Neoplastic Diseases* of Ewing, which, however, was last edited in 1940; its author is now dead and the time is ripe for a fresh work on the subject. Professor Willis's book is the outcome of many years of study, formerly and mainly at Melbourne and more recently at the Royal College of Surgeons. Those familiar with his earlier work on *The Spread of Tumours in the Human Body* (1934), and remembering his balanced grasp and comprehensive knowledge of tumours and their habits, will know what to expect here.

The earlier part of the book, comprising about one-fifth, is on the general features of tumours and includes a survey of their statistical study and an up-to-date account of experimental carcinogenesis. In the rest the author discusses the regional aspects of the subject. He is lucid, unequivocal, and often challenging; he treats controversial topics with a refreshing dogmatism tempered with honesty and scepticism and richly illustrated from his own experience. Many will disagree with his opinion on some subjects—for example, the position of the angiomas in the hierarchy of neoplasms, and his including Hodgkin's disease among the tumours of lymphoid tissue. But whether this condition is, as Willis insists, a form of sarcoma or whether it is, as more would agree, a granuloma cannot at present be decided. Willis regards all tumours of the lymphoid tissue as related variants of one disease—a simplification of the reticuloses that further study alone will justify or refute.

A novel and welcome feature of the book is the inclusion in each section of a paragraph or two on the incidence of the tumour under discussion in animals other than man; it is evident that the author has ranged widely outside human pathology. There is a bibliography at the end of each chapter with guiding notes to the more important or more useful papers listed. Excellent photomicrographs profusely illustrate the text, and every pathologist will be grateful for the author's concentration upon the less familiar types and their variations at the expense of those commonly depicted in current textbooks.

There can be little doubt that this volume will be most useful and popular. In future editions Professor Willis might consider the advisability of gathering together information on the glomus and carotid-body tumours in the light of recent work on these structures. We hope that some sections will be enlarged—for example, that on carcinoma of the suprarenal cortex.

DOROTHY S. RUSSELL.

MEDICAL SCIENCE

The Background of Therapeutics. By J. Harold Burn, M.D., F.R.S. Oxford Medical Publications. (Pp. 367; illustrated. 22s. 6d.) London: Geoffrey Cumberlege (Oxford University Press). 1948.

Therapeutics has made great advances in recent years and the therapeutic nihilism of 50 years ago is little more than a memory. The subject matter of pharmacology includes much of the work on which these advances depend, although it has not all been done by pharmacologists. If pharmacological teaching is to be a really live force it must describe not only the results of the work that has been done but also the methods by which these results were obtained. Some writers have tended to present the subject as a collection of facts with scarcely more logical connexion than the facts of anatomy. The new book by Professor J. H. Burn is a welcome contrast to this dull but practical type of book. He has written it for those engaged in teaching clinical medicine, and he takes them straight to the frontiers of knowledge.

The subjects chosen for discussion are the recent advances in physiology, pharmacology, biochemistry, and clinical science which have had most effect on therapeutics, but the excellence of the book depends not so much on the subjects reviewed as on the stimulating way in which they are presented. Professor Burn describes experimental facts in detail and encourages the reader to think out their significance for himself; he provides the clues, but in many cases the solution of the mystery is still unknown. In the first chapter he discusses various unorthodox systems of medicine and the reasons for their success. In later chapters he considers the antidiuretic hormone, thiouracil, antihistamine substances, malaria, sulphonamides, salicylates, folic acid, iron, calcium, oedema, digitalis, theories of anaesthesia, diabetes, and many other things besides. There is a useful summary of recent work on acetylcholine and its relation to myasthenia. The last chapter is called "Statistics Explained," and the list of contents encourages the hope that this is achieved in three pages: actually the chapter occupies nearly a dozen pages. Professor Burn presents all these subjects in a way that will surely provoke thought, stimulate discussion, and lead on to new knowledge.

In the preface he says that when he visited America in 1942 and 1943 he was strongly impressed by the great interest that physicians show in laboratory and clinical research. He believes that this interest has been fostered by the growth of professorial units staffed by clinical workers who spend a substantial part of their time in laboratories, where they learn that the discovery of new facts is not only something which they themselves can do but is also very well worth doing. "The great need in clinical medicine to-day is of young people trained for at least two, and preferably for five, years in the laboratory." Professor Burn has done more than anyone else in Britain to train young medical research workers in the inspiring atmosphere of an active laboratory. His new book will extend his influence over wider circles.

J. H. GADDUM.

RETROPUBIC SURGERY

Retropubic Urinary Surgery. By Terence Millin, M.Ch., F.R.C.S., F.R.C.S.I. (Pp. 208; 163 figures. 25s.) Edinburgh: E. and S. Livingstone. 1947.

The author does not confine himself to discussing only prostatectomy but gives an account of the retropubic route as a means of approach for other operations in urological surgery such as the repair of traumatic rupture of the posterior urethra, the relief of stress incontinence in women, and occasionally the opening of a prostatic abscess. But the main interest of this book lies in Mr. Millin's method of prostatectomy. A reviewer must consider and answer two questions—first on the author's success or failure in clearly expounding his methods, and secondly on the value of the methods themselves. The first is much easier to answer than the second. Mr. Millin gives an excellent account in clear English—and clear English is not a characteristic of surgical textbooks—of his operative technique, and with the help of the numerous and clear illustrations no reader should have any difficulty in understanding his methods. Indeed, the whole production of the book is far above the average and the publishers are to be congratulated on producing such a handsome volume in these times of economic stress.

Too little time has elapsed to allow of any final verdict on the value of retropubic prostatectomy. Mr. Millin is right in saying that no surgeon can remain content with the older operation, which infringed several of the accepted principles of surgery. There can be no doubt that in his hands, and assisted by his well-trained team, the retropubic method has given good results, but it remains to be seen whether a wider use of it for a longer time will lead to a lowering of the mortality of prostatic surgery. Both transurethral resection and the operation advocated by Harris have been hailed in the past as the methods *par excellence* of dealing with prostatic obstruction, but some of those who formerly spoke of them with the greatest enthusiasm have now learnt that both techniques have their limitations. It may well be that retropubic prostatectomy is destined to survive as the method of choice, but time alone can tell. More and more surgeons are undoubtedly adopting this technique.

KENNETH WALKER.

MALNUTRITION OF NERVOUS SYSTEM

Nutritional Disorders of the Nervous System. By John D. Spillane, B.Sc., M.D., M.R.C.P. Foreword by George Riddoch, M.D., F.R.C.P. (Pp. 280; illustrated. 20s.) Edinburgh: E. and S. Livingstone. 1947.

The study of the effects of malnutrition of the nervous system during the recent war has shown how complex the problem is and how much we have still to learn. The time was therefore appropriate for a balanced survey of the present state of our knowledge, and Dr. Spillane has provided one. He describes first the vitamins of the B group and then such well-recognized syndromes as pellagra, beriberi, polyneuritis, Wernicke's encephalopathy, encephalopathy caused by nicotinic-acid deficiency, and subacute combined degeneration of the spinal cord. He next discusses the mixed and complex clinical pictures presented by cases of nutritional neuropathy in warm climates and in wartime, and finally gives an account of his personal experiences among German and Italian prisoners of war and Polish refugees.

The result is a book full of interesting clinical data interspersed with valuable critical reviews of the pathogenesis of the various syndromes, but the method of presentation imposes work on the reader, who has himself to correlate the discussions of the same topic which appear in the different sections. Dr. Spillane has often wisely avoided dogmatism. His book will therefore appeal more to the critical student than to the reader who demands a predigested diet, but perhaps a little mental roughage is not a bad thing.

W. RUSSELL BRAIN.

SENSORY DISCRIMINATION

Anatomical Pattern as the Essential Basis of Sensory Discrimination. By Prof. W. E. Le Gros Clark, F.R.S., F.R.C.S. Forty-ninth Robert Boyle Lecture, May 29, 1947. (Pp. 16. 1s.) Oxford: Blackwell Scientific Publications. 1947.

In his Robert Boyle Lecture Prof. Le Gros Clark interprets afresh the anatomical basis of sensory discrimination in the light of knowledge derived in recent years from studying the anatomical patterns of sensory systems. Though brief, it is valuable as a very clear and concise review of a subject to which Prof. Le Gros Clark has himself contributed so significantly. He reminds us that certain predictions can be made about the probable anatomical basis for sensory discrimination from the fact that only one kind of impulse can be transmitted along a nerve fibre. The relevant discoveries support these predictions—namely, (1) that the sensory receptors provide a system of peripheral analysers whereby the various stimuli within a sensory modality are sorted out in the first instance; (2) that the nerve impulses generated by receptors within each modality become segregated on their way to the higher functional levels of the nervous system; and (3) that they are eventually projected on to centres that are organized in spatial patterns. The precise and definite topographical relations exhibited by the intrinsic elements in these cortical centres must form ultimately the structural basis for sensory discrimination. Prof. Le Gros Clark reviews each sensory system in turn, with special emphasis on the visual mechanisms. His attempt to relate the six-layered type of geniculate body to the trichromatic theory of colour vision is briefly referred to. He considers that the intricate sensory plexuses in which the afferent fibres become appropriately segregated are essential prerequisites for sensory discrimination, and he concludes by discussing the problem presented by their morphogenesis.

The interpretation proposed by Prof. Le Gros Clark raises as many problems as it appears to solve. Sensory discrimination regarded as though it were a separate faculty of the brain would certainly seem to demand a corresponding anatomical "discrimination" as its basis, especially in regard to the peripheral analysers and their centripetal pathways. However, discrimination is intimately related to all the other complex activities which are subsumed under the general term perception. So far as our immediate problem is concerned this might be of no great urgency if it could be shown that separate anatomical systems dealt with the various "units" of perception within a modality such as the appreciation of movement, contour formation, and perspective, the final synthesis being left to some higher centre. But in the case of vision, at least, the striate cortex and its afferent paths are themselves capable of the whole range of perceptual organization. Thus the same structural patterns in the brain which are to be regarded as the final determinant of sensory discrimination must also be capable of explaining the other aspects of perception. The problem is rendered all the more difficult in that many of the latter, such as sensory equivalence (an object in the visual field always remains the same object despite incessant changes in visual fixation), seem to require almost the opposite kind of anatomical basis to that which must be presumed essential for sensory discrimination.

PETER BISHOP.

INTRODUCTION TO MEDICAL GENETICS

Genetics in Relation to Clinical Medicine. By F. A. E. Crew, M.D., D.Sc., Ph.D., F.R.S., F.R.C.P.Ed. (Pp. 111. 10s.) Edinburgh and London: Oliver and Boyd. 1947.

The student of human genetics draws on a wide range of biological data derived from animal and plant breeding, experimental embryology, and serological research. He relies on statistical methods to verify his hypotheses to a far greater extent than does the practical breeder of stocks and crops or the investigator doing designed experiments in the greenhouse and laboratory, who can control matings and standardize the conditions of his experiments. The medical student needs both a book to which he can turn for a simple exposition of statistical methods appropriate to the investigation of human material and a lively appreciation of the bearing of modern experimental research in the field of development and heredity on the problems of health and disease. Prof. Crew's book, like those of Frazer Roberts and E. B. Ford, is primarily on results and interpretations. He brings to his task the equipment of a medical training and a distinguished career of research in animal breeding before undertaking new responsibilities as Professor of Social Medicine in the University of Edinburgh.

The book fills a real need, and it is packed with lively information and pertinent examples of a wide range of biological phenomena relevant to medical problems. Prof. Crew's trenchant style as a platform speaker is less adapted to easy reading than to congenial hearing. One of his great merits is a very temperate and imaginative appreciation of the complexities of the relations between nature and nurture as they affect the interpretation of medical problems—a quality all the more praiseworthy because it is only too rare among those who have devoted much of their time to the simpler problems of animal and plant breeding.

The book incorporates much recent work in the rapidly widening field of human genetics, including for instance a concise and lucid account of Prof. Fisher's theory of the inheritance of the rhesus antigens, and it is a useful work of reference—though an index would enhance its value. The rapidity of the advance of human genetics depends however on the keen observation and acumen of the general practitioner with the ready co-operation of the specialist in genetics, and too much emphasis cannot be given to Prof. Crew's plea on p. 83: "What are needed more than anything else for the speedy advancement of our knowledge of human genetics in its relation to clinical medicine are (1) the country-wide systematic preparation of pedigrees by genetically informed and interested medical practitioners, and (2) a storehouse where these can be received, pooled, and interpreted."

J. A. H. WATERHOUSE.

DEAF CHILDREN

Opportunity and the Deaf Child. By Irene R. Ewing, O.B.E., M.Sc., and Alex W. G. Ewing, Ph.D., M.A. With an appendix by Molly Sefton. (Pp. 252. 9s. 6d.) London: University of London Press, Ltd.

A child unable to understand what is said to it because of defective hearing suffers a handicap that is as misleading as it is serious—misleading because of the ease and frequency with which the real nature of the handicap is overlooked, serious because at an age when mental development should be as continuous a process as physical development the principal channel of communication is denied the deafened child. From their wide and unique experience the Ewings have written a small

handbook in response to numerous requests from doctors, parents, and teachers of deaf children. It should be read by all interested in the welfare of deaf or hard-of-hearing children. Its value is further enhanced by an account by Molly Sefton of how the world appears to a deaf child, and the full and fascinating story she tells of her education is a great tribute to her teacher, Mrs. Ewing.

Starting with a general survey of the education of the young deaf child and the methods of testing hearing in young children, the Ewings describe their experience with a clinic for young deaf children and their views on the development of speech in both normal and hard-of-hearing children. They compare the normal and deaf child and give a guide to the training of the deaf child in its earliest years. They discuss the problem of the hard-of-hearing as opposed to the deaf child and consider the value of hearing-aids. They then discuss deaf children who suffer from additional handicaps, and fully describe the schools that specialize in the education of these children. They stress the usefulness of lip-reading and the dual importance of getting speech into as well as out of the deaf child.

In this small handbook of 250 pages the Ewings have included a full and practical account of all the problems that confront the parent, teacher, and doctor who may be faced with the upbringing of a deaf child. It is a striking testimony to a lifetime's study, and it is likely to become a standard work for all who are interested in deaf or hard-of-hearing children.

TERENCE CAWTHORNE.

PAIN IN THE BACK

Chronic Structural Low Backache due to Low-Back Structural Derangement. By R. A. Roberts, M.B., Ch.B., D.M.R.E. (Pp. 105; 137 illustrations on 46 plates. 45s.) London: H. K. Lewis and Co. 1947.

This book is a valuable contribution to the study of a common but little understood complaint the sufferers from which have too often been labelled as neurotic or even malingerers, especially in the Services. In the greater part of the book the author describes cases of low-back pain in which careful radiographical study has revealed lesions of the "pars interarticularis" of a lumbar vertebra. The author believes that the lesion, which may in some cases be congenital, is more often the result of strain leading to bone absorption like that seen in cases of "march fracture," reossification sometimes but not invariably following. A striking feature in many of the cases described is the association of visceral disorders, haemorrhoids, dysuria, albuminuria, haematuria, and even symptoms attributed to colitis, appendicitis, or cholecystitis which failed to yield to the usual medical or even surgical measures. Often the sufferer was referred to the psychiatrist and a diagnosis of anxiety state arrived at, even in men of fine type. The detailed account of these cases and of the various diagnoses, which led often to discharge from the Service with the stigma "neurotic," leaves the reader with an uncomfortable feeling of having been similarly in error. The author wisely emphasizes that a careful inquiry into the history of the cases is essential and may result in fewer being referred to the psychiatrist. He amply illustrates the desirability of examining the spine radiographically in doubtful abdominal cases and makes clear the risk of manipulation in treating chronic backache.

The second part of the book is on the study of neurovascular and visceral symptoms. The author suggests that oedema of soft tissues as a result of strain is a cause of pain and the precursor of nodule formation and adhesions in fibrositis. This idea calls to mind the striking results sometimes obtained from simple acupuncture as described by Sir James Simpson, a method now generally abandoned but which may have the same effect in relieving tension in inflamed structures as procaine injections or more elaborate measures. The book is illustrated by admirable reproductions of radiographs, and explanatory diagrams assist in their study. We cordially recommend it to general practitioners as well as to specialists in orthopaedics and rheumatic disorders, for even though the author's conclusions may not meet with universal acceptance they cannot fail to prompt the reader to further study and investigation.

C. W. BUCKLEY.

THE DIFFICULT CHILD

The Doctor and the Difficult Child. By William Moodie, M.D., F.R.C.P., D.P.M. Second edition. (Pp. 231. $2 or 11s. 6d.) New York: The Commonwealth Fund. London: Geoffrey Cumberlege (Oxford University Press). 1947.

The appearance of the second edition of this book is welcome, for it is one of the most sensible and informative that have been written on the subject. The occurrence of the second world war may have led some people to expect far-reaching changes in the book, since it might have been thought that the problems of child development would have greatly altered. Yet in spite of the bombing and evacuation, of family disruption and interference with education, the essential pattern remains the same. The stable child seems to take everything in his stride and adjusts himself without difficulty to abnormal conditions, whether these be sleeping in shelters or removal from the town to the country. To the unstable child similar experiences may be devastating, and he reacts to them by enuresis, sleeplessness, nightmares, or even by lying and stealing, as he has always done in response to difficulties. Bombing would seem to have been the least disturbing of wartime influences and interruption of education the worst, though the broken homes resulting—first from the departure of the father and secondly, too often, from his return—have made life more difficult for the child.

The author has added a new chapter on play therapy showing how important and fruitful this method may be in experienced hands for the psychological investigation and treatment of young children. A second new chapter is on the full constitution of the child-guidance team in the light of 20 years' experience. For the rest, the book is much as it was. In the first part the author discusses the recognition, diagnosis, and treatment of problem children on general lines, and in the second the various manifestations of mental difficulty in children such as lying and stealing, sex difficulties, speech defects, fits, anxiety, nightmares, and enuresis. As is usual with Commonwealth Fund publications the book is admirably produced, and all dealing with children should take advantage of this exposition of Dr. Moodie's experience and clarity of mind.

R. G. GORDON.

SCHIZOPHRENIA: AN AUTOBIOGRAPHY

The Kingdom of the Lost. By J. A. Howard Ogdon. (Pp. 256. 10s. 6d.) London: John Lane, the Bodley Head, Ltd.

The description by a schizophrenic of the experiences he has undergone during the acute phase of his illness is always a matter of great psychiatric interest, and especially so when the patient is a man of ability and learning. To these advantages Mr. Ogdon adds those of very unusual powers of introspection, a clear memory of past experience, and a gift for graphic writing. There can be little doubt that his book will be of interest to the intelligent lay public. To the psychiatrist it is likely to become a classic among self-descriptions.

Mr. Ogdon's illness lasted for about three years, and during this time he had several phases when symptoms were florid, each of which passed off leaving residual disabilities. A striking feature throughout was the development of symbolizations, by which every person, almost every object in his neighbourhood, numbers, colours, letters of the alphabet, and so on, came to have a symbolic meaning with the force of reality. Mental and physical activities were tied down by compulsions and inhibitions associated with these symbolic meanings. His account of the "heroic" phase, in which the patient felt that he controlled the world by his power over its symbols, makes fascinating reading.

Mr. Ogdon believes he is almost unique among schizophrenics in having cured himself without medical aid. Of the reality of the cure there can be little doubt, although the selfconscious psychiatrist is likely here and there to pick on a sequence of thought or a mode of expression that bears a schizophrenic stamp. Nor can there be much doubt that Mr. Ogdon did a very great deal to help himself, though once again those who are not disciples of Yoga or of Baudouin will be unable to follow him all the way in what he says. The main help that

these mental disciplines provided was probably not in halting the progress of the disease, which seems to have undergone a spontaneous remission, but in enabling the patient to rid himself of residual symptoms. Mr. Ogdon's criticisms of the law relating to certification and of the standards of treatment meted out in mental hospitals will be read with sympathy. He may rest assured that, in the second of these, matters are changing very rapidly, and a change in the first is inevitable in the not very distant future.

ELIOT SLATER.

WAR MEDICINE

Inter-Allied Conferences on War Medicine 1942–5. Convened by the Royal Society of Medicine. Hon. Editor: Major-General Sir Henry Letheby Tidy, K.B.E., M.D. Assistant Editor: J. M. Browne Kutschbach, M.B., B.Ch., D.P.H. (Pp. 531. 50s.) London: Staples Press. 1947.

Sir Henry Tidy is to be congratulated on his collecting together in this volume various papers read at the Inter-Allied Conferences on War Medicine held between 1942 and 1945. Perhaps to those who served as medical officers—and the book will have little appeal to those who did not—the section entitled "Active Operations" will be the most interesting. The very names, which had at the time few but the most odious associations, have been endowed by the passage of years with a nostalgic attraction. Brigadier Wallace's characteristic account of the battle of El Alamein and the advance through Daba, Fuka, Matruh, Sidi Barrani, Sollum, Bardia, Tobruk, and on to Tripoli; the R.A.M.C. at Arnhem; the personal adventures of medical officers by sea and by land in Europe, Africa, and Asia—it is to these that the ex-Service doctor will turn with a feeling of satisfaction that he had, in however humble a capacity, some share in these experiences.

The papers on organization and professional subjects have an interest that is different, but no less. The control of dysentery and malaria, the studies of infective hepatitis, the organization of the blood-transfusion service, and the treatment of neurosurgical, vascular, and maxillofacial injuries are all discussed. The lessons learned during 1914–18 were largely buried in the *Medical History of the War*, and in 1939–45 there was little time or inclination to disinter them from a work of such forbidding magnitude. Many of the lessons were relearned in the wasteful school of experience and are restated in this small—although unduly expensive—compilation.

R. BODLEY SCOTT.

THE APPENDIX

The Appendix. By R. J. McNeill Love, M.S., F.R.C.S., F.A.C.S. (Pp. 186; 54 illustrations. 12s. 6d.) London: H. K. Lewis and Co. 1947.

It is well known that the London Hospital was the home in this country of the expectant treatment of certain cases of acute appendicitis which is appropriately called the Ochsner-Sherren treatment, thus commemorating the "London" surgeon who popularized the method here. Mr. McNeill Love thoroughly considers the pros and cons of the matter, though the method is widely accepted and practised nowadays. However, he discusses not only acute appendicitis but all appendicular lesions, and although the book is much smaller than many others on the same subject it is one of the best summaries, especially from the practical point of view. The advice given is always wise and of real value to the surgeon, and the sections on differential diagnosis reveal the author's large experience. We found the chapter on chronic appendicitis particularly interesting and concur with the author's critical attitude towards the *x*-ray diagnosis of the condition. While not ignoring the help that *x*-ray examination may afford, he is especially careful not to let it sway his judgment. There can be no doubt that too many innocent appendixes are removed as a result of an *x*-ray diagnosis unconfirmed clinically and that more discrimination would reduce the number of wrong diagnoses. The numerous illustrations are useful and clear. Altogether this is an admirable addition to the literature of the appendix, not too long-winded and yet containing all the essentials.

NORMAN C. LAKE.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

The Medical Clinics of North America. Chicago Number. (Pp. 299. No price.) Philadelphia and London: W. B. Saunders. 1948.

A collection of papers chiefly on endocrinology.

Diseases of the Chest. By R. Coope, M.D., B.Sc., F.R.C.P. 2nd ed. (Pp. 541. 25s.) Edinburgh: E. and S. Livingstone. 1948.

An introduction for students and practitioners.

Textbook of Public Health. By W. M. Frazer, O.B.E., M.D., M.Sc., D.P.H., and C. O. Stallybrass, M.D., D.P.H. 12th ed. (Pp. 571. 30s.) Edinburgh: E. and S. Livingstone. 1948.

This well-known textbook has been brought up to date in the light of the recent Health and Insurance Acts.

An Introduction to Physical Methods of Treatment in Psychiatry. By W. Sargant, M.A., M.B., M.R.C.P., D.P.M., and E. Slater, M.A., M.D., F.R.C.P., D.P.M. 2nd ed. (Pp. 215. 10s. 6d.) Edinburgh: E. and S. Livingstone. 1948.

A general account for the clinician.

Liver Injury. (1) Transactions of the 6th Conference, May 1 and 2, 1947, New York. (2) Transactions of the 5th Meeting, September 26–27, 1946, New York. (Pp. 74 (1), and 127 (2). $2.25 each.) New York: Josiah Macy, Jr., Foundation. 1947.

A variety of papers on experimental and clinical aspects of liver disease.

Surgical Treatment of the Abdomen. Edited by F. W. Bancroft, A.B., M.D., F.A.C.S., and P. A. Wade, A.B., M.D., F.A.C.S. (Pp. 1,026. £5 10s.) London: J. B. Lippincott. 1947.

A textbook, with operative details; includes section on anaesthesia.

New Biology. Edited by M. L. Johnson and M. Abercrombie. (Pp. 159. 1s. 6d.) West Drayton: Penguin Books. 1948.

Includes articles for the layman on statistics, hybrid vigour, and human teeth.

American Medical Research Past and Present. By R. H. Shryock, Ph.D. (Pp. 350. 14s.) London: Geoffrey Cumberlege. 1947.

A history of the growth of medical research in the U.S.A.

Emergency Surgery. By Hamilton Bailey, F.R.C.S., F.A.C.S., F.I.C.S., F.R.S.E. 6th ed. Part 1. (Pp. 180. 21s.) Bristol: John Wright. 1948.

The first of five parts in which the sixth edition of this well-known textbook is being published.

Normal and Abnormal Psychology. By J. E. Nicole, O.B.E., D.P.M. (Pp. 96. 8s. 6d.) London: George Allen and Unwin. 1948.

A concise account of normal and abnormal psychology for students.

Manual of Clinical Therapeutics. By W. C. Cutting, M.D. 2nd ed. (Pp. 712. 25s.) Philadelphia and London: W. B. Saunders. 1948.

A concise manual for house-men and practitioners.

Introduction to Medical Science. By G. L. Muller, M.D., and D. E. Dawes, R.N., M.A. 2nd ed. (Pp. 580. 20s.) Philadelphia and London: W. B. Saunders. 1948.

An introduction to pathology and medicine for student nurses.

Communicable Diseases for Nurses. By A. G. Bower, A.B., M.S., M.D., F.A.C.P., and E. B. Pilant, R.N. 6th ed. (Pp. 657. 20s.) Philadelphia and London: W. B. Saunders. 1948.

A general account for nurses.

Minor Surgery. By F. Christopher, B.S., M.D., F.A.C.S. 6th ed. (Pp. 1,058. 60s.) Philadelphia and London: W. B. Saunders. 1948.

A textbook, with lists of references and many illustrations.

Standard Radiographic Positions. By N. Davies, M.S.R., C.T., and U. Isenburg, M.S.R. 2nd ed. (Pp. 223. 21s.) London: Baillière, Tindall and Cox. 1947.

Many diagrams illustrate the positions.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY APRIL 24 1948

THE PLEBISCITE

The Council of the B.M.A. met last week to consider the Minister's statement in Parliament and the answers he gave to questions put to him by the B.M.A. It decided to hold an immediate plebiscite, the terms of which are described elsewhere in this issue. Some members of the profession may argue that another plebiscite is not necessary, and probably all will feel some reluctance at having once more to define their attitude to the National Health Service Acts of 1946 and 1947. It is, however, essential to recognize that the profession is now faced with a new situation, and before the Council can take any further step it is imperative that it should know whether the medical profession considers that the new proposals of the Minister of Health go far enough to meet the overriding objections to the Act which induced such an overwhelming proportion of doctors to disapprove in February of the Act in its present form. The democratic mechanism of the plebiscite may be cumbersome, but those who may hesitate to vote again should remember the heavy burden of work that falls upon those at B.M.A. House who have to conduct this operation. We would therefore urge once more all medical men to return their plebiscite forms and to vote with a full sense of responsibility towards the present situation.

In making up their minds how to vote medical men will ask themselves first whether the Minister's proposals are in fact sufficient to safeguard the essential freedoms of Medicine. They should also take into account the reaction of Parliament and the Press to the temperate and conciliatory observations made by Mr. Bevan in the House of Commons on April 7. If this second plebiscite should provide an adequate majority to justify collective opposition to service under the Act, public opinion will play a large part in determining the result. We must therefore take note of the fact that public opinion, as expressed by those who represent their constituents in Parliament and by responsible daily and weekly newspapers, considers that Mr. Bevan has made a conciliatory move towards a solution of present difficulties. It is recognized that this move has been made as the direct result of the enormous vote of no confidence in the present Act given in the plebiscite earlier this year. The Government had to take this into account and has in consequence modified its policy. Doctors must now ask themselves whether the modifications go far enough to remove their underlying fears of the Act in its unmodified form.

In a leading article in the *Journal* of Dec. 20 last year we stated that "preoccupation with financial and other details, important as they are, for medical men have their living to make, must not obscure the main issue which the medical profession now has to face." This issue, we suggested, was summed up in the first of the principles enunciated by the Negotiating Committee in 1945. It is well to repeat the words of this:

> The medical profession is, in the public interest, opposed to any form of service which leads directly or indirectly to the profession as a whole becoming full-time salaried servants of the State or local authorities.

This was the first and cardinal principle formulated by the Negotiating Committee and accepted by the profession. The Minister's new proposals must be measured against this principle. At the last Special Representative Meeting the Chairman of Council, Dr. H. Guy Dain, discouraged the Representatives from driving themselves "into the undesirable position of establishing a list of priorities in their demands." He begged the meeting "not to enter into a Dutch auction or a bargain sale, but to keep in mind the maintenance of freedom and independence." Dr. Dain on the same occasion said: "We doctors want a health service. We want our services to be available to all who need them. We are ready to enter into any discussion directed to making it possible for the medical profession to co-operate with the Government. If the Government can show us other ways, new ways, of preserving our independence, we are willing to listen."

The policy of the B.M.A. has always been clear and never more clearly stated than in these words of its principal spokesman, the Chairman of Council. Its objections are not to the Act as a whole, not to a general medical service for the nation, but to entering a service which in the words of the above principle "leads directly or indirectly to the profession as a whole becoming full-time salaried servants of the State or local authorities."

Doctors must now ask themselves whether the Government's promised Amending Bill directed towards the prevention of the introduction of such a service through Regulations under the present Act does meet the profession's fundamental objection as expressed in the first of the principles of the Negotiating Committee. If we are to be fair we should recognize that Mr. Bevan has agreed to put on the Statute Book what he has hitherto given only as an assurance, and which could not be binding on any future Minister of Health. We may recall, too, that during the Second Reading Debate on the Bill Mr. Key, then Parliamentary Secretary to Mr. Bevan, said that the Government recognized that a full-time salaried service was incompatible with free choice of doctor. Mr. Key then said: "We regard the free choice of doctor by the patients as being the more important principle, and, therefore, we put forward a compromise"—the compromise of payment partly by capitation fee and partly by salary. Mr. Bevan's promised Amending Act must be linked with his abolition of the universal basic salary. In his replies to the B.M.A.'s questions he is, too, prepared to consider the conditions applying to those who would like to opt for a basic salary. We recall that Mr. Willink proposed that the general practitioner should be in contract with the Central Medical Board—a central body which would also appoint the general practitioner wishing to enter the public service.

Since 1945 the position has changed. First of all, the practitioner is now in contract not with the Central Medical Board but with the Local Executive Council. It was then proposed that the Local Executive Council should have the principal voice in selecting a man for a vacancy in the public service on the advice of local doctors. In his replies published last week Mr. Bevan stated that, with certain obvious limitations, the practitioner will have the right to choose his partner or assistant. "Every doctor," Mr. Bevan states, "will be free to practise where he chooses, unless it is one of the areas where the Medical Practices Committee decide no more doctors are needed in the Service. In all cases except the latter 'consent' will be automatic."

Faced with these facts, the general practitioner will have to consider whether he is now offered adequate safeguards against becoming a full-time salaried servant of the State. In the absence of adequate safeguards the majority of general practitioners believe that retention of the custom of buying and selling practices is the only guarantee of freedom. Mr. Bevan continues to refuse to amend those Sections in the Act which abolish the buying and selling of public practices. It is clear that the Government will not give way on this point. The advantages to the doctor of this custom are many and considerable, and have been often discussed in these columns. The principle behind this custom is the safeguard afforded to the practitioner against becoming a full-time salaried servant of the State. General practitioners must now decide whether, with the abolition of this custom, the Minister's new proposals safeguard their essential professional freedom. In coming to a decision on this matter they will reflect that public opinion as expressed by all political parties is not in favour of the buying and selling of public practices in which the practitioner receives his remuneration from State funds. As our correspondence columns have shown, there are some young doctors who, while voting against the Act in its present form, consider that this custom now offers financial obstacles to the young man entering practice. It is important that practitioners should fit all these facts into the general picture in making up their minds on this extremely difficult question.

Mr. Bevan would not agree to the B.M.A.'s suggestion that his scheme for distributing doctors should be postponed for an agreed period in order to determine by experience whether the problem may not, in fact, largely solve itself. Mr. Bevan suggests that the system should be worked for an agreed period and then should be subjected to special review in about two years' time. We understand that the Medical Practices Committee is to draw up a list of areas in which the number of doctors is considered to be sufficient for the population. This will be a difficult task. In the rest of the country the doctor will be free to practise where he likes. The Minister would have been wise if he had got rid of the objectionable feature of negative direction and substituted for it "positive inducement" to attract men into difficult or undesirable areas; it is true that he has set aside a sum of £400,000 for inducement purposes.

The Minister also refuses to grant the right of appeal to the courts against the decision of the tribunal and the Minister to remove a doctor from a service open to the whole community. The legal background of this matter is discussed elsewhere in this issue by Dr. A. J. Gorsky. While there may be some practical force in Mr. Bevan's arguments for his scheme, and while in practice very few doctors are likely to be affected, his refusal to grant the right of appeal seems to us to infringe a principle fundamental to the law of this country. Any one person will have the right to report a doctor direct to a tribunal composed of three men, two of whom have no legal training or experience to guide them in establishing the facts of a case. In his Andrew Lang Lecture at St. Andrews University on April 4 Lord Macmillan said: "There will soon be little of the common law left either in England or in Scotland, and the Statute-book and the vast volumes of statutory rules and orders will take its place." "No feature," he said, "was more noteworthy in recent social history than the tendency of the legislature to invade increasingly the customary conduct of the citizen's daily life and to regulate by law what was previously left to free choice." On the same day a Resolution was passed at the Annual Meeting of the Bar Council viewing with concern "the formidable growth of administrative and quasi-judicial tribunals" and urging the general council of the Bar "to examine procedure adopted by such tribunals and make such recommendations as they think fit in regard thereto." Mr. Bevan's machinery may provide that justice will be done, but we doubt whether it will make it possible that justice "may manifestly be seen to be done."

We have dealt more particularly with those matters which affect general practitioners. Consultants are safeguarded against the introduction of a full-time salaried service by the Minister's promised Amending Act, and in his reply to the first B.M.A. question he states that if any Regulations are made under Section 66 of the Act, which refers to Regulations with respect to the qualifications, remunerations, and conditions of service of officers employed by bodies constituted under the Act, he will exclude from them "any provision for universal whole-time specialist services." His reply to question 6 is that on the appointed day existing hospital staffs will be taken over by the hospital regional boards, and we understand that Boards of Governors will take over the existing staffs of teaching hospitals. Mr. Bevan's reply to the second question is that consultant and specialist appointments should in most cases be part-time. He assumes that existing private pay-bed accommodation "will lie where it is at present"; but he cannot now tie himself or future hospital bodies to future distribution. In his third answer he observes that he has excluded 200 hospitals and that he will be unlikely to exclude a hospital first and then acquire it by purchase. Consultants may have cause to be uneasy about Mr. Bevan's statement on pay-bed accommodation and about his answer to the question relating to the medical committees. It would be more satisfactory if medical committees could nominate their representatives on Boards of Governors or Hospital Management Committees. We welcome the assurance of the Minister that medical men will have complete freedom to publish their views on the organization and administration of the Service as well as on clinical matters "without any prior consent to do so." As this is something which is

fundamental to the essential freedoms of professional life we may hope that the Minister will make this assurance statutorily secure in the new Amending Act.

When the B.M.A. Council met before the last plebiscite was held it issued a brief statement to every member of the medical profession which ended thus: "It would be lacking in its [the Council's] duty, however, if it did not make abundantly clear to every member of the profession its carefully considered and determined view that the profession should not take service under the Act in its present form." The Council then gave a clear lead to the profession to vote "No." Dr. Dain now (p. 805) states that Mr. Bevan's "concessions present us with a change of situation which makes the new plebiscite necessary." The Council observes that the profession has gained some points and not gained others, and makes this cautiously worded observation: "Bearing in mind that what we have secured falls short of what we sought, the Council's view is that, while progress has been made to that end, the freedoms of the profession are not sufficiently safeguarded." It goes on thus: "Whatever your views, please vote in order that the plebiscite may faithfully represent the views of the profession and guide those whose heavy responsibility it is to act on its behalf."

It is now the duty of every member of the medical profession to weigh the present situation in the balance, and to decide for himself whether the Minister's new proposals give him as an individual, and the profession as a whole, the necessary freedoms without which the individual doctor is unable to practise his profession in an atmosphere of intellectual freedom and in the exercise of full personal responsibility for the care of those persons in the community who seek his indispensable help and advice.

SHORTAGE OF BOOKS

The invention of printing 500 years ago provided the means by which division of the labour of thought could be effected and hence's man's knowledge and mastery of his environment rapidly enhanced. Any restriction on the free exchange of opinion must have a harmful effect on the progress of civilized man, and in so far as it affects some communities and not others they will fall behind in what shows no signs of ceasing to be a struggle for existence. It is therefore a matter of concern that doctors and students continue to be hampered in their pursuit of knowledge by the severe shortage of books, and in order to investigate its extent and causes we addressed some questions to publishers, booksellers, and librarians. A report on their replies appears at page 800 of this issue.

The replies reveal that the medical books for which there is most demand are the standard textbooks of clinical and preclinical subjects. According to the evidence of the booksellers and librarians, each of whom was asked to name the 10 books most in demand, we found that those 10 most often chosen comprised 2 textbooks of medicine, 2 of surgery, 2 of pathology, 2 of anatomy, and 2 of applied physiology. This class of books is of fundamental importance to the learning and practice of medicine, yet, as the replies to another question show, these are the books most difficult to obtain.

The replies from the publishers suggested a number of reasons for the lack of books. There seems unfortunately to be no single impediment that could be easily removed, but rather many obstacles interposed between the publisher's desk and the bookseller's shelf leading to delay of publication up to two years—a period, on the average, about two or three times as long as before the war. Lack of paper, binding materials, skilled workers, and machinery are together or variously mentioned as causing the shortage. The export of books abroad—officially encouraged to obtain foreign currency—is also an important cause; one publisher mentions that his exports to the U.S.A. are double those of 1939. There is a great demand abroad for British books, particularly from the Commonwealth and from European libraries ruined in the war. Further, the much greater demand at home aggravates the material scarcity. There are more students receiving all kinds of higher education than ever before, their numbers being increased by young men and women who served in the Forces during the war. Commercial firms are said to be ordering more books. The growing specialization of medicine creates the need for a diversity of works on comparatively limited subjects—a need sharpened by the great scientific advances that were as usual incident to waging war.

The shortage of American books in this country is probably more easily remedied than is commonly known. Books may be imported from the U.S.A. either by authorized importers or by private individuals. The importers have a quota by which their expenditure on these books is limited to the average of what they spent over several years immediately before the war. As the replies from the booksellers and librarians show, the quota is short of the present demand. One reason for this is the increased cost of books, fewer being obtainable for the same permitted expenditure. Private persons, however, are entirely free to import books from the U.S.A. As Lord Chorley said, replying for the Government in the debate on the import of books in the House of Lords on Feb. 18: "Any one can get currency from his bank, give an order to a bookseller in America, and the book will be imported by parcel post. There is no difficulty about it, and many professors and scientists have been importing books in this way."

We may ask why recognized importers should not be allowed to obtain these books in bulk and thereby save the cost of individual packing, postage, and insurance. Presumably the existing arrangements, more costly and troublesome to the individual buyer though they are, save scarce dollars in the long run, but it seems that their efficacy in doing so depends largely on the public's remaining ignorant of them. Far more satisfactory would be to increase the importers' quota to 200% of the pre-war figure, as Lord Balfour of Inchrye suggested in the Lords' debate. Lord Chorley on that occasion said that the President of the Board of Trade was examining the quota system, adding, "And it may well be that as a result there will be some increase in the quota," but he could not hold out the hope that it would be 200%. No report has yet been issued.

To make books easy of access to those who need them has never been more necessary than to-day, and on another

page Mr. Le Fanu records the formation of a medical group within the Library Association. Sir William Osler suggested such a group at the annual meeting of the B.M.A. in 1909, and a similar body called the Medical Library Association in America celebrates its 50th anniversary this year. Though hampered by lack of funds, the medical group is preparing a catalogue of periodicals in medical libraries throughout the British Isles, and has already established a pool for the exchange of duplicates, which the Wellcome Historical Medical Library is administering.

More books and still more books should be produced, yet the restrictions are of such a nature that unless the Government helps to remove them it is unlikely that they can soon be overcome. Official circles do not yet appreciate that the unfettered production of scientific books is vital if this country's intellectual life is to flourish. Foreign currency must, of course, pay for other commodities besides paper, strawboards, cotton, and printing machinery, but many imports in comparison with these are of only trifling significance to the nation's well-being. Men and women should be encouraged through the Labour Exchanges and other means to enter the printing industry. The quota of books importers may obtain from abroad should be increased. Unless the fruits of knowledge are enjoyed when fresh, students will continue to "cram" hurriedly with one eye on the time when their borrowed books must be returned, and the achievements of our scientists, professional men, and technicians will fail to be "on the record" in time.

ACUTE INTUSSUSCEPTION IN CHILDHOOD

A death from intussusception is doubly tragic, for the victim is almost always a fine healthy baby, and the fatal outcome is often the result of an error of judgment. In a most instructive analysis of 100 successive cases which appears elsewhere in this issue Drs. Brenda Morrison and Donald Court show some of the ways by which such tragedies may be avoided. Early diagnosis is of course the most important single factor in saving life. In some cases failure in this may be due to the fact that the diagnosis did not cross the mind of the practitioner who was called in to an ill baby. In others, however, the delay in getting the child into hospital can be more justifiably ascribed to the difference between the presenting signs in actual life and that classic picture reproduced in textbook after textbook with a fidelity that arouses suspicion.

The differences from the classic description seen in this series are many and important. Vomiting was an early and constant symptom, occurring in 90% of cases; blood from the rectum (the crucial diagnostic point of the textbooks) appeared during the critical first day in little more than half of them, and was altogether absent in a quarter. The main point for the family doctor is that sudden abdominal pain in a previously healthy baby justifies its immediate and urgent admission to hospital, where it can be investigated, closely watched, and, if necessary, operated upon by those with special experience. A dangerous reason for delay is the presence of fever, which may suggest an infection. Yet in half the cases the temperature was considerably raised, between 100° and 104° F. (37.9° and 40° C.).

Once the child is in hospital the history is taken with the utmost care, if need be from a parent specially fetched. This, together with close and continuous watching and careful physical examination, establishes the diagnosis. The authors do not advise barium enemata as an aid to diagnosis, and on this point some may differ from them. On an admittedly small experience, they consider that the procedure may be harmful to the child, though they mention the excellent results reported by other workers who used enemata as a form of treatment, with or without laparotomy. The subject of the treatment of intussusception, however, hardly falls within the scope of the article, but the authors mention two most important points. The first is that the operation should not be begun unless an intravenous drip is running, and the second that the anaesthetic should start with the surgeon standing ready by the table. This paper emphasizes once again the need for checking classical descriptions of well-known conditions.

ARRESTING HAEMOPHILIC HAEMORRHAGE

For many years blood transfusion has been known to be valuable in the arrest of haemophilic haemorrhage. At first the benefit was attributed to the content of platelets, but it was later shown that plasma free from formed elements was as effective as whole blood.[1] During the last twelve years work has been carried on in the U.S.A. with the object of identifying and preparing for therapeutic use the anti-haemophilic substance or substances in plasma. Results have shown that the responsible factor resides in the globulin fraction of the plasma proteins.

Minot and Taylor[2] have recently summarized this work. They describe and compare the results obtained from the intravenous injection of Cohn's plasma Fraction I, freed from fibrinogen and prothrombin, with the effects of transfusion of blood or whole plasma: 400 mg. of Fraction I dissolved in isotonic saline produces roughly the same effect as 100 ml. of fresh blood or 80 ml. plasma. The accelerating effect on coagulation may last for 48 hours and enable operations such as dental extractions to be carried out in comparative safety. The results are, however, variable; the effective dosage differs from patient to patient, and some who react to crude plasma will not respond to the separated fraction. Minot and Taylor claim that no reactions are caused and that injections may be repeatedly given without a refractory state developing. There is, however, some doubt on this latter point. In a recent report Craddock and Lawrence[3] describe the development in two patients with haemophilia of a circulating anticoagulant capable of slowing the coagulation of normal blood *in vitro*. Both patients became refractory to treatment with either fresh whole blood, plasma, or Cohn's Fraction I; in fact, the anticoagulant seemed to develop after repeated transfusions or injections of anti-haemophilic globulin. These observations may not be so exceptional, for it has long been recognized that in some haemophiliacs the benefit of repeated transfusions becomes less and less as time goes on. Craddock and Lawrence's report is thus not encouraging from the point of view of the long-term prevention of haemophilic haemorrhage by injection of preparations of human plasma.

Very powerful haemostatics for local application only have recently been developed in the U.S.A. Preparations of powdered human and animal thrombin requiring only fibrinogen on which to act can coagulate blood in a few seconds, and may be applied directly to the bleeding area. This is, however, only a side issue; the fundamental problem of correcting the abnormality in the plasma of the haemophiliac has not yet been solved. Great progress has been made, but there is still a long way to go.

[1] Patek, A. J., Jr., and Stetson, R. P., *J. clin. Invest.*, 1936, **15**, 531.
[2] *Ann. intern. Med.*, 1947, **26**, 363.
[3] *Blood*, 1947, **2**, 505.

THE ADVANTAGES OF IMPURE PENICILLIN

It has been suspected for some time that the imperfectly purified penicillin of earlier days was more effective than the refined present-day product. This suspicion first arose in connexion with the treatment of syphilis, the earliest results of which were obtained with crude material in doses quite inadequate by present standards: they were nevertheless better, at least when allowance is made for altered dosage, than those obtained since. Recent investigations now tend to confirm the suspicion. In connexion with syphilis itself Dunham and Rake[1] first noted more than two years ago that crystalline penicillin G had no effect *in vitro* on the motility of *T. pallidum*, whereas impure penicillin reduced it. Rake, Dunham and Donovick[2] have now gone further and shown that certain samples of impure commercial penicillin were decidedly more active than pure penicillin G (the most active of the pure types) in the treatment of syphilis in the rabbit. Another observation pointing in the same direction is that of Groupe and Rake,[3] who found that the action of commercial penicillin on the viruses of canary pox, fowl pox, and vaccinia was entirely due to impurities: this activity persisted after the penicillin itself had been destroyed with penicillinase, and pure penicillin had no effect.

The most exhaustive study so far on this perplexing problem is that of Hobby, Lenert, and Hyman.[4] They began by comparing the effect of penicillins of various degrees of impurity with that of pure penicillins X, dihydro F, F, G, and K on *Str. pyogenes* and *Pneumococcus* infection in mice. Having established that, unit for unit, the impure materials were more effective, they worked thenceforth with one of these which had an activity of only 54 units per mg. and with pure penicillin G. The relative therapeutic efficacy of these two materials may be expressed by saying that 100 units of the former had the same effect as 250 to 300 units of the latter. They showed that when the impure material had been treated with penicillinase a small quantity of it would enhance the activity of pure penicillin. The degradation products of penicillin itself had no such effect, hence the greater activity of the impure material must be due to an unknown substance other than penicillin derivatives. This substance also enhanced the activity of other penicillins than G. An admixture of K enhanced the activity of G to a greater extent than would be expected on a unit basis. This study, in which 25,000 mice were used, deals also with other aspects of the subject, but its main interest is in showing conclusively that in the purification of penicillin something unknown and valuable is lost.

When the full therapeutic possibilities of penicillin were first envisaged it was expected that deliberate modifications of its molecule might widen the sphere of its usefulness. This prediction has not yet been fulfilled, and in the meantime the chemistry of natural penicillins has proved unexpectedly complex. According to Winsten and Spark[5] the number of these may be as great as eleven. But the added complication of an impurity or impurities of unknown nature enhancing therapeutic effect is still more baffling. Until these substances can be identified it might well be worth while to revert to older methods of manufacture, and so return to the cruder product which we have so unjustifiably despised in recent times. Highly refined penicillin is essential for intrathecal and intraocular use, but for intramuscular injection crude material has only minor disadvantages; it is more painful, more apt to cause local inflammatory changes, and perhaps more often responsible for sensitization phenomena. At least we now have an explanation why the standard dose of 100,000 units a day which was used for almost all purposes in early therapeutic studies was apparently as effective as the larger doses used to-day. Whether to change manufacturing policy in view of these discoveries must depend in part on the supply position: the present shortage would appear to favour the change and could doubtless be relieved by it. We have no information that such a step is contemplated, but it appears to deserve serious consideration.

[1] *Amer. J. Syph.*, 1945, **29**, 214. [2] *J. infect. Dis.*, 1947, **81**, 122.
[3] *J. Immunol.*, 1947, **57**, 17. [4] *J. Bact.*, 1947, **54**, 305. [5] *Science*, 1947, **2**, 192.

DIAGNOSIS OF ADRENAL TUMOURS

Two fatal cases of adrenal tumour are described in this week's *Journal*, one of a 14-year-old girl with virilism and hypoglycaemia reported by Mr. L. R. Broster and Dr. J. Patterson, and the other of a 40-year-old policeman with gynecomastia reported by Drs. C. N. Armstrong and J. Simpson. The correct diagnosis was soon made in the first case because of virilism and a huge output of urinary neutral 17-ketosteroids (the patient excreted almost 2 g. in a day), but despite this she died within 10 days of admission to hospital owing to hypoglycaemia which was so severe that she alternated between fits and coma and could not be brought to operation. In the second case a full investigation of the complaints of abdominal pain and night sweats did not reveal the cause of the symptoms, and it was only when the patient returned to hospital three months later that an adrenal tumour was diagnosed. The daily output of neutral 17-ketosteroids at this time was 34 mg., but later this rose to 104 mg. when the inoperable tumour had grown and secondaries had developed in lungs and liver. In spite of this it seems probable that the tumour was chiefly secreting oestrogen, since there was an associated gynecomastia. Seven other similar cases to this have been reported in the literature, and in the two in which oestrogen output was determined it was abnormally high.

These two cases illustrate the value and limitations of 17-ketosteroid estimations in the diagnosis of adrenal carcinoma. A rise in output is suspicious, but the extent of the rise does not mirror the degree of overactivity of the gland, nor does it coincide with the extent of virilism in women, for the girl with the huge output was less severely affected than girls of similar age with adrenal hyperplasia and outputs only 5–10% as great. This is where Patterson's colour test for dehydroisoandrosterone may be valuable. It is reported that this compound or closely related ones are present as a higher proportion of the ketosteroid output in cases of adrenal tumour than in cases of adrenal hyperplasia. So far Patterson[1] has applied the test to the neutral 17-ketosteroids from the urine of nine cases—three of adrenal tumour and six of adrenal hyperplasia. Positive results were obtained only in the former. The test has not yet had a severe trial since the output of neutral 17-ketosteroids per day in the two groups were widely separated—24–81 mg. in the hyperplasia group and 215–1,980 mg. in the tumour group. A crucial test of the value of the colour reaction will have to be made on a case such as that reported by Armstrong and Simpson, in which the output was relatively low. An interesting point is made by Broster and Patterson, who remark that their patient had one normal adrenal. In their experience both adrenals are present in cases of heterosexual virilism, while tumour of a solitary adrenal gland is associated with isosexual precocity. This agrees with the finding of one normal adrenal in the policeman. The endocrine changes might be rung *ad infinitum* to account for this and for the hypoglycaemia in the young girl.

[1] *Lancet*, 1947, **2**, 580.

THE LOYAL ADDRESS OF THE BRITISH MEDICAL ASSOCIATION

We print below the loyal address of the British Medical Association to His Majesty the King on the occasion of the twenty-fifth anniversary of Their Majesties' marriage.

To The King's Most Excellent Majesty:

The Humble Address of the President and Members of the British Medical Association.

May It Please Your Majesty,

We, Your Majesty's dutiful and loyal subjects, the members of the British Medical Association distributed throughout Your Majesty's Commonwealth and Empire, humbly offer to Your Majesty, and to Her Most Gracious Majesty the Queen, congratulations on the twenty-fifth anniversary of Your Majesties' marriage.

We beg leave on this auspicious occasion to express to Your Majesty our unfailing fidelity to Your Majesty's Throne and Person. We recall with deep gratitude Your Majesty's constant devotion to the well-being of Your Majesty's subjects throughout the past years of grave national privation and peril, and it is our fervent hope that Your Majesty's benevolent reign may long continue in a future blessed with prosperity and peace.

Signed on behalf of the British Medical Association:

HUGH LETT, *President.*
H. GUY DAIN, *Chairman of Council.*
J. B. MILLER, *Chairman of Representative Body.*
JOHN W. BONE, *Treasurer.*

NATIONAL HEALTH SERVICE TRIBUNAL

THE LEGAL ASPECTS

BY

J. ARTHUR GORSKY, L.M.S.S.A.
Barrister-at-Law

The claim made by Lord Horder at the Special Representative Meeting on Wednesday, March 17, that the doctors were fighting for liberty is consistent with the recent statement of the National Executive Committee of the Labour Party that " . . . democracy cannot live without freedom of speech, press, and organization; without the right to protection against arbitrary arrest, the right of appeal to a non-political judiciary." This declaration of democratic principles, to which we as a free profession whole-heartedly subscribe, sounds a note of warning that these principles are our only safeguard against delegated legislation.

The growth of Administrative Law is a fundamental change in Constitutional Law, which developing slowly has now gathered momentum and threatens our liberties. The tendency of modern legislation is for Parliament to state the broad principles of its policy in an Act which empowers the Minister of State to delegate the duty of developing the details by Regulations and Orders to his executive administrative officers, who may be invested with delegated adjudicatory powers against which in some cases there is no right of appeal.

It is our duty as a medical community to be on guard against the uncontrolled growth of Administrative Law so far as it affects us in the provisions of the National Health Service Act and the subsequent Regulations and Orders that the Minister of Health, or those purporting to act for the Minister, may make by virtue of the very wide powers given to him in Clause 75.

Two evil tendencies have developed as a result of this system of delegated legislation. They were emphasized by Lord Reading in the House of Lords when he introduced the Liberal Party's Bill for the " Preservation of the Rights of the Subject."

". . . the growing usurpation by the Executive of the powers of Parliament, and the increasing exclusion of the courts of law from what is perhaps their supreme function—protecting the individual citizen against excessive and illegitimate encroachment on his rights and abuses of authority."—(*Hansard*, Vol. 147, No. 71, p. 764.)

The doctors demand the right of appeal to a non-political judiciary, and in my view we cannot subscribe to the opinion expressed by Mr. Bevan that to give the doctor his right of appeal to the High Court against his dismissal " would be a judicial sabotage of socialized services." (Parliamentary Debates: Standing Committee C, Wednesday, June 26, 1946.) There has been, in my opinion, a considerable amount of loose thinking and confused writing on the contentious question of " right of appeal."

Inquiries by Government Departments

The disquieting element in Clause 42 is subsection 7 (*b*), which empowers the Minister to apply, with modifications, any of the provisions of Section 290 of the Local Government Act, 1933, which is designated " Power of Government Departments to Direct Inquiries." Two very important implications result from this power possessed by the Minister:

1. The Tribunal becomes a departmental inquiry and is therefore *not* an independent tribunal, in spite of the fact that the legal chairman is appointed by the Lord Chancellor.
2. As such it becomes an " administrative " and not a " judicial " body.

The distinguishing features of an " administrative " tribunal are that it is a law unto itself, and that it possesses a " pure,"[1] " absolute,"[2] " complete,"[3] or " unfettered "[4] discretion. The extensive case law on the subject makes it quite clear that if no right of appeal is granted in the Act the High Court cannot interfere with an administrative tribunal's exercise of the discretion given to it. Such a tribunal is master of its own procedure except where an Act specifies that the Minister shall make regulations prescribing such procedure.

The National Health Service Act, 1946, gives the Minister power under Clause 42 (7) (*a*) to make regulations for prescribing the procedure for the holding of inquiries by the Tribunal. It is noteworthy that all the Minister has ordained is contained in Regulation 35 in the National Health Service (Service Committees and Tribunal) Regulations, 1948, which states the proceedings shall be held *in camera* unless the respondent has applied for the inquiry to be held in public, but otherwise the procedure at the inquiry " shall be within the discretion of the Tribunal." The High Court can only interfere in a limited way if the decision of the Tribunal " is contrary to the manifest principles of justice."[5]

Administrative Law

The vital point at issue is whether " administrative " tribunals do in fact administer justice. In my submission they do not function as judicial courts but base their decisions on policy and expediency and not on legal rights and liabilities. The exercise of their power rests not on law but on opinion.[6] Their discretion refers to their powers of fact-finding which the High Court cannot override. They have far wider powers than judicial tribunals to decide for themselves what they will do, or whether they will do anything at all.[7]

The High Court cannot impose its own standards of procedure or make such a tribunal conform to the rules of evidence which usually operate in the High Court. If there is an excess or defect in jurisdiction, or a vital error in procedure which needs remedying, then the High Court can exercise its control in these very exceptional cases by means of its orders of *certiorari*, prohibition, or *mandamus*.[8]

" Administrative " tribunals cannot be compelled to state a case to the High Court, and with few exceptions are not under any obligation to give reasons for their decisions. A doctor would be dismissed on a finding of facts (Regulation 40), and he would not have the power to ask for a case to be stated, nor could he compel the Tribunal to give any reasons for its decision. Dismissal on a legal point, which would be extremely rare, might conceivably give the dismissed doctor the right to

ask for a case to be stated by the Tribunal, but only where the legal point dictated the decision of the Tribunal. How will a doctor know that, if an "administrative" tribunal need not give any reasons for its decision? Therefore in my submission there can never be a case of unlawful dismissal if you cannot challenge the fact-finding decision of an "administrative" tribunal. The right of appeal to the Courts has been taken away from the doctor in spite of Mr. Bevan's assertion in the debate on Monday, Feb. 9, 1948 (*Hansard*, p. 43).

Therefore the only appeal of the doctor will be to the Minister. Lord Meston in his speech when the Bill was before the House of Lords made it clear what this would mean. "A doctor would be condemned to professional death for something much less than misconduct on a report of an inspector of the Ministry which would not necessarily be read by a busy Minister." The matter can be argued in another way. Unlawful dismissal implies an injury to a "right"—the right of a doctor to practise under the National Health Service Act. Gordon[9] has discussed this.

> "But apart from a right to have prescribed procedure followed, no one can have any rights before a tribunal acting 'administratively'; rights are outside its province; no one has a right to a favourable decision; and though incidentally the tribunal may consider points of law, such points, whatever view may be taken of them, can never dictate the decision that the tribunal must make. For the decision must be governed by policy and expediency; and though the state of the law may be a factor in policy and expediency, it can never be the governing factor; otherwise policy and expediency cease to have meaning and are only other names for justice. But if the tribunal is not judicial, and so does not administer justice, it must suit itself as to how far it lets points of law enter into its policy. This is one very good reason why tribunals acting 'administratively' cannot state cases, except on points of jurisdiction or prescribed procedure. A stated case must raise a point of law that concludes the question whether the decision was right or wrong; whereas, whichever way the High Court rules on a point of substantive law, this ruling can never determine whether an 'administrative' order was right or wrong. Indeed such an order never is right or wrong, correct or incorrect."

There may be a regrettable mistake of law which the Court cannot question; but the Tribunal's mistake of law will not deprive the doctor of a legal right. It will be the "administrative" order which will deprive the doctor of his right to practise. As this order will never be "right or wrong, correct or incorrect" it follows that there never will be a legal injury to that right. And where there is no legal injury there cannot be a legal remedy.

Mr. Bevan in his speech on Feb. 9 postulated some curious doctrines. They accentuate the dangers of Ministers' powers in delegated legislation which, like Clause 35, the iniquitous penal clause, are insidiously altering the Constitutional Law of this country. He asserted that to allow the doctor the right of appeal that he had been wrongfully dismissed in the terms of his contract would completely revolutionize the relationship of the judiciary to the legislature. As a rejoinder to that assumption I quote Prof. Laski[10]: " . . . It is difficult to overestimate the significance of the judiciary in the modern State. The work of the Executive has become so vast, the powers delegated to it by the legislature are so wide, that the judges are, perhaps more than at any previous time, the real safeguard of personal liberty. It is only necessary to recall cases like *Coppage v. Kansas*, or *R. v. Halliday*, to realize how nearly judicial activity goes to the very heart of freedom."

The Minister of Health agrees that "the courts are competent to judge the law and to construe the statutes. . . ." Since when have the judges not been competent to evaluate facts and to give decisions on matters of fact? By virtue of education, training, experience, high mental calibre, and complete impartiality they are more competent to decide these matters than a tribunal of three, two of whose members are appointed by the Minister. It is not suggested that such a tribunal will not be impartial, but only one member of the tribunal will be a lawyer and he may be overruled by two non-legal members.

Another conception which should be refuted is that the relationship between the Minister and the doctors is that of employer and employees. The Law of Master and Servant does not apply. A clerk is a servant; an opera singer under contract is not. The contract between the doctor and the local Executive Council acting as agent of the Minister is in my opinion in the nature of a partnership or quasi-partnership agreement. The limitations of space do not permit me to amplify this point.

Any Other Person

There are two other disturbing features of Clause 42 which must be stressed. The Tribunal must inquire into representations made by an Executive Council that the continued inclusion of a general medical practitioner in the list of those undertaking to provide general medical services would be prejudicial to the Service. But it may inquire in like manner if representations are made by any other person. Although the wording of the Clause is only permissive in this latter case, it is pernicious because it enables any other person to by-pass the Executive Council and go direct to the Tribunal. It is of paramount importance to remember that the Minister of National Insurance is vitally interested in the operation of the National Health Service Act as well as his own National Insurance Act, 1946. He or his officials may well be that "any other person" who under Clause 42 may make representations direct to the Tribunal and by-pass the local Executive Council. In this connexion I would draw attention to Regulation 10 (*d*) (i) of the preliminary draft of the National Insurance (Unemployment and Sickness Benefit) Regulations, 1948.

By virtue of the power under (7) (*b*) of Clause 42 the Minister has applied subsection 5 of Section 290 of the Local Government Act, 1933, in Regulation 37 relating to the Tribunal. This gives the Tribunal power to make orders as to costs which may be made a rule of the High Court. It is not clear whether costs under this subsection may be taxed under rule 15, Order 65, Rules of the Supreme Court, nor is there any mention of a right of appeal against this award of costs. Not only is a doctor liable to professional death but he may be mulcted in onerous costs as an additional penalty.

We are enjoined to enter the Service and improve it by experience and practice. To that I would reply *Quod ab initio non valet, in tractu temporis non convalescit.* That which is bad from the beginning does not improve by length of time.

Dr. William A. Robson, Professor of Administrative Law, London University, has drawn attention to "the lack of principle which has been manifested by Parliament in naming the appellate body to which a citizen must go for redress. There is no clear distinction drawn between the class of cases which are to be decided by the courts of law and that which goes for determination to one of the central departments of Government. . . . Much could be done to make the ordinary business of litigation more rapid and less expensive to the parties than at present, and it is preferable that the courts of law should be improved in these respects than that judicial functions should be conferred on administrative bodies merely in order to attain those ends."

Finally I refer to Mr. Bevan's opening words in the debate on Feb. 9, and submit for the reasons I have expressed in this contribution that the conditions under which the Minister of Health has invited the medical profession to participate in the National Health Service Act are not fully in accord with our professional freedom and dignity.

REFERENCES

1 *R. v. Woodhouse* (1906) 2 K.B. 501 at 527.
2 *R. v. Howard* (1902) 2 K.B. 363 at 378 and at 381.
3 *Sharp v. Wakefield* (1891) A.C. 173 at 185; *R. v. Surrey JJ.* (1888) 52 J.P. 423; *Boodle v. Birmingham JJ.* (1881) 45 J.P. 635.
4 *Laceby v. Lacon and Co.* (1889) A.C. 222 at 228; *Sharp v. Wakefield* (1891) A.C. 173 at 185.
5 *R. v. London County Council* (1915) 1 K.B., and *R. v. Bird* (1898) 62 J.P.
6 *Shell Co. of Australia v. Federal Commissioner of Taxation* (1931) A.C.
7 Gordon, D. M., *Law Quarterly Review*, 1933, **49**, 105.
8 Wright, Rt. Hon. Lord, "Liberty and the Common Law," *Cambridge Law Journal*, 1945.
9 Gordon, D. M., *Law Quarterly Review*, 1933, **49**, 426.
10 Laski, H. J., *Studies in Law and Politics*, 1932, George Allen and Unwin, Ltd.

A new film-strip which has been issued recently by the Medical Unit of the Unicorn Head Film Strip Library has been prepared with the technical assistance of Dr. R. C. MacKeith and Mr. J. M. Watson. The strip, which has eighteen frames, deals with the diagnosis of threadworm infestation, and shows particularly the collection of ova by the glass pestle method and by use of adhesive "cellophane" tape. This film-strip is concerned only with diagnosis, and further information about it may be obtained from the Technical Director of the Unit at 177, The Vale, Acton, London, W.3.

BRITISH MEDICAL LIBRARIES

BY

W. R. Le FANU, M.A.

Librarian, Royal College of Surgeons of England

London is better provided with medical libraries than any other city in the world. There are great libraries in Edinburgh and Dublin; Manchester has an excellent medical library, and most of the other university towns are well provided for also. How far do these large collections meet the profession's demand for literature? Lord Justice Asquith (1944) wrote in *The Times* a few years ago that "County Court judges work under grave handicaps as regards law libraries." Is the provincial physician or surgeon in a like predicament? Are the existing libraries sufficiently complete and accessible, and is the service which they offer fully known to the profession at large?

The newest work in every branch of science and medicine appears first in the pages of periodicals, but subscription to more than a few of the 2,000 medical periodicals now published each year is too expensive for the private pocket, and to keep back-numbers even of those few is too space-consuming in the private house or flat. The collection and provision of periodicals has thus become the chief preoccupation of active libraries, and on libraries the reader relies who wishes to follow all the latest work and to look back over the sequence of previous work in his field of inquiry.

Two great London libraries, those of the Royal Society of Medicine and the British Medical Association, provide for their Fellows and Members throughout the country a very complete reference service, lending books or sending photographic copies when a particular book cannot reasonably be allowed out of the library, besides supplying bibliographies, translations, etc. In fairness to their subscribing membership neither of these libraries can extend its service to non-subscribers, though the Royal Society of Medicine generously allows visitors the use of its books at the library. Each of these libraries aims to amass a full collection of medical periodicals of the entire world. The Royal Society of Medicine, which already owns an unrivalled store of older medical periodicals, stated before the recent war its intention "to collect all representative medical journals from every country." Recently the British Medical Association has begun to collect all available medical periodicals from all over the world. Gathered in the first place for the work of the Association's abstracting service, they will be permanently available in the library. As these attempts at comprehensiveness reach towards their completion London will become increasingly the outstanding repository of medical literature, for it must be remembered that the national library at the British Museum also has a very wide collection of medical periodicals in many languages. The task before the authorities of other medical libraries will therefore tend to become that of taking special fields for intensive cultivation and serving a clientele specialized by its locality or interest or status, which will rely for wider study on access to the general libraries.

Outside London the great university libraries, notably those of Oxford and Cambridge, Manchester, Bristol, Edinburgh, Glasgow, and Dublin, are richly stocked. With these must be counted the fine libraries of the Royal Colleges of Physicians of Edinburgh and of Ireland and the Liverpool Medical Institution. All these libraries cater principally for the clinical specialist. They are supplemented for the general practitioner by a large number of smaller libraries, chiefly those of local medical societies, which have their prototype in the Medical Society of London. The libraries in this class are for the most part maintained for the use of each society's own members, though in some cases the library's facilities are extended to all practitioners in the district. The lesser libraries cannot offer their readers more than a simple lending service of current books, for which in many cases they rely, as do many individual doctors and students, on the subscription lending library which has been maintained for a century by Messrs. H. K. Lewis, the medical booksellers and publishers. The reference collections of these local libraries are of very varying value, and in many cases inadequately administered. Useful as their service is, an insurmountable weakness lies in their not being able to offer their readers ready access to a wide range of current periodicals or of older work.

Facilities for Research Workers

This weakness is particularly felt by the research worker. For him the specialist libraries are peculiarly valuable, though of course he must rely also on the general libraries already named. At the universities, notably at Oxford, Cambridge, and Dublin, each research department maintains a small library of its own supplementing the main university collections, but in almost every case these are purely for private access by the research staff of the particular department. Similar private staff libraries are maintained at research institutions such as the Lister Institute and the Imperial Cancer Research Fund, and at the research departments of hospitals and of commercial pharmaceutical manufacturers and the like.

The most efficient research library and one of wide professional usefulness is that of the Medical Research Council at the National Institute for Medical Research at Hampstead, which provides library service for all the centres of research of varying size and scope promoted by the Council up and down the country. This Government-supported library is most liberal in extending its facilities to other medical libraries by inter-library lending, thus making its resources available far beyond its immediate duty and benefiting in return by the reciprocal facilities earned. The large library at the Ministry of Health is a private staff library similar to those named above. The Medical Research Council of Ireland does not itself maintain a library, but has promoted the work and liaison of existing Irish medical libraries.

Two large special libraries in London are particularly valuable to the research worker—those of the London School of Hygiene and Tropical Medicine and the Royal College of Surgeons of England. Though both are essentially the private libraries of their institutions, whose members, staff, and students have first claim upon their resources and service, each has always been administered in a liberal spirit. The library of the Royal College of Surgeons is among the larger medical libraries in the country, rich in long series of periodicals. These are confined, with a somewhat wide interpretation, to the literature of surgery, its specialties, and the sciences ancillary to surgery. In particular the library is strong in the literature of anatomy and physiology. It is thus peculiarly well fitted to cater for postgraduate students of surgical specialties and for advanced workers in the basic sciences. Its collection of nineteenth-century books is probably, within its own fields, second only to those included in the general collection of the Royal Society of Medicine; in modern books it is more strictly specialized. The library of the London School of Hygiene and Tropical Medicine has from its inception 25 years ago been closely specialized in its two chosen fields, in which it has built up first-class collections. It has always been liberal in lending books, both directly to other libraries and through the general system of inter-library loans organized by the National Central Library. The Liverpool School of Tropical Medicine also has an excellent specialized library.

The restriction of certain libraries to intensive collection of a chosen subject opens the way for the possible development of a system of mutually complementary, while fully independent, libraries. The potentialities of such a policy are arousing much interest among American library authorities at present, more especially with regard to the acquisition of foreign books. At home there is more concern among medical libraries to agree upon delimitation of fields before planning schemes of acquisition. If it could be agreed that everything available in a particular subject would be the special care of a certain library or libraries, the organization of information service for the whole cadre of research workers would be simplified. The time has gone by when the research worker was ploughing a lonely furrow and relying on the library resources of the institutions to which he happened to have right of access. The correlation of libraries lags behind, but without in any way giving up their individuality they are moving towards a generalization of service. A corollary of any such agreement to specialize would be the transference to each specialist library of books in its chosen subject held by libraries now confining their

activity to other interests. A step in this direction has lately been taken by the transference from the Royal College of Surgeons of much of its holdings in public health, both series of official reports and individual books, to the London School of Hygiene. The success of this policy depends on the willingness of libraries to lend their books to other libraries and also to admit readers from outside their own membership, for it is often quicker, at least in London, to get the reader to the book than the book to the reader. These facilities, which are of course only possible for non-subscribing libraries, are now very general practice.

There are in active existence a number of important specialized libraries of this nature, notably those of the societies and institutions on the borders of medicine, such as the Pharmaceutical Society, the Royal College of Veterinary Surgeons, and the Royal Sanitary Institute. These are already the natural resource of the worker in each particular field. But equally there are a number of unfilled gaps. There is no single library, for instance, to which an inquirer for medico-legal literature can be confidently recommended. No doubt the general medical libraries, the university libraries, and the great law libraries could between them supply all reasonable requests in this subject, but the individual inquirer would have to search those sources for himself.

Collaboration between Libraries

This is the point at which there is most need for concerted action by libraries. There is at present no means of knowing, except by direct asking at each individual address, what are the resources of the profession's libraries except in periodicals. The principal medical libraries are included in the two available union-catalogues, which record the holdings of periodicals in the country's libraries; both of them are now considerably out of date, however. The *World List of Scientific Periodicals*, 1934, includes the major institutional libraries, while the *Union Catalogue of Periodicals in University Libraries*, 1937, includes the libraries of medical schools affiliated to universities; but these two lists together are not exhaustive. A *List of Medical Libraries and Information Bureaux in the British Isles* (*J. Docum.*, 1946, 2, 119) published by Aslib (the Association of Special Libraries) shows that there are some 150 medical libraries of varying size and type in existence here. Several projects for collaboration among them are taking shape at present. Quite recently mutual action by the librarians of five large medical libraries in London, helped by a generous grant from the Medical Research Council, has produced a card-catalogue of their holdings of current periodicals. Copies of this catalogue have been deposited at each of the libraries which co-operated in its completion—namely, the British Medical Association, London School of Hygiene, Medical Research Council, Royal College of Surgeons, and University College, London (Thane Library of medical sciences), and at other centres. It is intended to keep this catalogue regularly up to date.

The Central Medical Library Bureau, established by the Rockefeller Foundation at the Royal Society of Medicine at the end of the recent war, is still preoccupied with its first charge of helping war-scarred medical libraries on the Continent. It is at the same time compiling a union list of current periodicals in the major medical libraries of the British Isles, and its facilities for the supply of microfilm copies of medical literature that cannot be borrowed, traceable by this new union-catalogue, will simplify the present haphazard methods of inter-library lending, which have, however, worked well to the mutual advantage of many libraries and their readers through many years. The Central Bureau has generously placed modern microfilm reading-machines in the principal medical libraries of the country. Thanks to the existence of American and French union-catalogues and of excellent free microfilm services in Washington (Army Medical Library) and Paris (Faculté de Médecine and Pasteur Institute) it is already easy for any medical library to obtain from those centres copies of articles not possessed anywhere in Britain.

Even more promising but still awaiting funds for their prosecution are two schemes planned in some detail through the Library Association, the professional body of librarians. The University and Research Section of the Library Association has worked out a scheme for surveying and making known, and thereby more readily accessible, the resources of the research libraries of the country in every subject including medicine. The second scheme is confined to medical collections. Last autumn medical librarians formed themselves into an organized group within the Library Association, which will, it is hoped, soon become a substantive section of the Association. Such an association of medical librarians was proposed by Sir William Osler at the Annual Meeting of the British Medical Association so long ago as 1909. A similar body—the Medical Library Association—had then been active in America for a decade and is to celebrate its fiftieth anniversary in May of this year. The Medical Library Association, which is international in scope and to which several British libraries belong, has done much to promote the activity and prosperity of medical libraries by its conferences and publications. Its service for the exchange of duplicate material is efficient and highly practical in placing books where they are needed. The newly formed British group of medical libraries has in preparation, but also awaiting funds for its completion, a union-catalogue of all periodicals in medical libraries throughout the British Isles. The group has already established a pool for interchange of duplicates, which is being administered by the Wellcome Historical Medical Library.

The chief demand of clinicians and students is for current literature, but the research worker ignores the work of his predecessors at the risk of overlooking undeveloped hints, of losing perspective in his attack on new problems, or even of wasting effort over work already recorded. François Magendie (1827) remarked long ago that, in turning up the authorities after making some fresh physiological observation, he had often found his complete discovery in Haller's *Physiology*, published more than a generation earlier. "I was much put out," he wrote, "and often cursed that wretched book in which I found everything, but I was consoled to realize that, since others had made discoveries before me, by persisting at work I could still find some unobserved facts."

Historical medical literature is not a mere symbol of prestige or even of proud tradition for the libraries who own it: it is the only record of previous progress. As Mr. Churchill (1944) reminded the Royal College of Physicians, "The longer you can look back the further you can look forward." The wealth of historical literature in this country is immense. The British Museum, William Hunter's library at Glasgow, the Royal College of Physicians of London, and the Wellcome Historical Medical Library are only the outstanding collections in a series probably without match in any other country. The resources of these collections, scattered over many medical libraries, both in rare early books and in the literature of the last two centuries—the period of Hunter, Jenner, Lister, and our immediate predecessors—are comparatively unexplored. Certainly they have not been cared for and developed as have the corresponding collections in America. Their value as essential tools in the humanist approach to medicine is now better realized and more attention is being paid to their upkeep and development. The possibility of co-operative cataloguing of this material is now being mooted.

Co-operative attack on the various projects outlined above ought to promote a spirit of friendly rivalry among libraries to achieve their common aim, previously pursued in too isolated units, which is to provide their readers with access to a full range of medical literature in the simplest and quickest way. One class of readers which is not adequately catered for is that of medical students. Each medical school has its library, but their book stock and administration is of varying quality, while there is in London an overall shortage of reading-room space for undergraduates. The medical schools in London are all affiliated to the University, but there is no correlation of their library services. Library provision for the teaching and research staffs of hospitals is similarly uneven. Many of the older hospitals have fine historical libraries lacking adequate care or staff; some of the newer hospitals are providing (Avery Jones, 1948) up-to-date library service for their whole-time specialists. In two or three provincial centres, notably at Manchester, hospital, medical-school, and medical-society

libraries have been combined, with marked increase of efficiency and service to the readers drawn from each group. Over the country as a whole, however, the need is not for unification but for development of individual units to the standard set by the best, through correlation of activities.

REFERENCES

Asquith, Sir C. (1944). *The Times*, Jan. 6.
Avery Jones, F. (1948). *Lancet*, 1, 435.
Churchill, W. S. (1944). *British Medical Journal*, 1, 368.
Magendie, F. (1827). *J. physiol. expér.*, 7, 84.

INQUIRY INTO BOOK SHORTAGE

Though the date when printing with movable types is not known exactly, it is thought to have been just about 500 years ago—1448. The extraordinary increase in man's knowledge of his environment that has characterized the last five centuries has depended largely on the swift interchange of ideas, especially by means of printed matter; and the demand for serious books, particularly works of a scientific or technical nature, is probably greater to-day than it ever has been. Unfortunately, it cannot be satisfied in this country.

We have heard complaints from medical students and practitioners for some time that they cannot obtain enough books. In order to discover if there is indeed a shortage of medical books—"medical" implying all aspects of the science and art of medicine—we wrote to most of the leading publishers and booksellers who specialize in these books and to the librarians in charge of a number of medical libraries. We asked them certain questions; there follows a report on their replies.

Books Most in Demand

In order to find out which particular books are most required by practitioners and students our first question to librarians and booksellers asked them to name the 10 medical books most in demand. It would be invidious to publish their selection of these books, but we have amalgamated the 24 lists that we received and added up the choices for each book. Ten books were named in 6 or more replies, one book being distinguished by as many as 17 votes. These 10 books were all standard textbooks and comprised 2 textbooks of medicine, 2 of surgery, 2 of pathology, 2 of applied physiology, and 2 of anatomy.

Is the Demand Met?

Our next question to librarians and booksellers was sent also to publishers; we asked whether they could meet the demand for British medical books. Of the 20 librarians who replied none answered unequivocally that they could do so, though one said that he could supply what was wanted except for books out of print and those—a few cases—out of stock, and one that the Copyright Act of 1911 ensured his receiving one copy of all books published. Thirteen librarians said that in general they could meet the demand, with various qualifications. Some order books before they are published, because they find that books run out of print soon after publication. They are therefore unable to assess the quality of a book before ordering it. Further, if a book should prove to be popular, it is usually impossible to obtain more copies, and the demand for it cannot be satisfied. Some libraries receive preferential treatment from local booksellers, enabling them to obtain at least one copy of a new book or new edition, but they may find that one copy is insufficient to meet the demand. Most remark on the long time that elapses between ordering a book and receiving it, 6 to 12 months being mentioned and even longer in a few cases, a circumstance particularly inconvenient to a small library that does not have several of the previous editions to lend. Only one librarian said that the funds at his disposal are the limiting factor rather than the book shortage. Four librarians replied that they are unable to meet the demand because a sufficient number of books are not available. The question did not apply to one librarian, but he makes the interesting point that, owing to the shortage of British books, students are using a number of American textbooks that are unsuitable for their particular course of study.

All the 6 booksellers who answered this question said that they are unable to meet the demand or find it extremely difficult to do so, the chief reason being that their waiting-lists for a particular book, especially the more popular, normally contain more names than copies of books they receive. Reprints or new editions of standard works often take as long as two years after issue of the previous edition to appear in the bookshops, with the result that some students may have to go through the whole of a course of study without being able to obtain a requisite textbook. One of the publishers mentions in this connexion that there have been times recently when no standard work on either anatomy or physiology was available. Of the 9 publishers who answered this question 7 said that they cannot meet the demand, or cannot do so in most cases, and 2 said that they can "after delays" or "only with very great difficulty." One comments that books required by only a few workers have to give place to standard textbooks, so that books on specialized subjects are unlikely to be reprinted when they ought to be. Another points out that the increasing specialization of medicine necessitates more books being published than before the war. He adds that the demand both at home and abroad is greater than formerly, and that the difficulty in obtaining books from America enhances the demand for similar British works.

We asked booksellers and librarians what classes of books were most difficult to provide—such as standard works on medicine and surgery, students' textbooks, research monographs, etc. As might be expected from the lists they sent us of those books most in demand, the majority replied that their main problem is to supply sufficient students' textbooks and standard works on medicine and surgery. Two librarians find that monographs are the hardest to obtain. One bookseller comments that the supply fluctuates between different groups of books, and mentions in particular that agricultural students are this year probably worse off than medical students. One librarian states merely that it is the more popular books that are difficult to get.

Causes and Extent of Shortage

The paper available for printing books is at present controlled by a quota. The basic amount is 60% of the pre-war quantity, and for educational (including medical) books and/or export a further 20% is allowed. There is also a book publishers' reserve, which provides paper additional to the quota for reprinting books that in the public interest should be kept in print. In addition there is an export pool to meet *bona fide* export orders.

In order to gain some idea of the causes and extent of the shortage we asked publishers, first, what the main causes are, and, secondly, the time compared with 1938 that elapses between acceptance of a manuscript and publication of the book. Of the 9 publishers who answered the first of these questions, 4 stressed the lack of paper as the main important limitation. One of these added that difficulties over binding the books also caused delay, and another mentioned shortage of labour, especially in the binding industry. One publisher said that the main cause is the shortage of labour and machinery and 2 that it is delay in binding. Two find that all these factors impede them. One of the publishers who finds that binding is the main difficulty drew attention to the grave shortage of female labour; since the war, for various reasons, women have tended to remain at home who would before have gone out to work. The cotton required is also in short supply. It would be impossible to bind large books in paper covers chiefly because the machinery for doing it is not available and would have to come from the U.S.A. The materials and skilled labour required for the illustrations that must adorn many medical books are also scarce.

Eight of the 9 publishers find that it takes two or three times as long to produce a book now as it did in 1938—for example, nine months instead of three, two years instead of nine months. The one exception says that there is not much in it provided that he can plan ahead.

Fate of Manuscripts

Arising from the problem of having to allot the restricted paper ration to produce new books, new editions, and reprints is whether publishers must reject manuscripts that they would publish if they had sufficient paper. We put this question to them, and of the 9 who replied to it one said that he does not

have to do so. Five stated that they must refuse some manuscripts, one of these mentioning that this selection particularly affected "doubtful" manuscripts likely to have a limited sale, and another saying that he has to refuse manuscripts because they would be out of date by the time they could be published. One publisher does not reject any work considered suitable for his list but solves the problem by reducing the size of editions. One says that he has not had to reject any "major" works, and one that the shortage of compositors causes long delay before a new book can be set up in type, whereas reprints do not suffer so much.

Books from Abroad

Finally, we put two questions to booksellers and librarians on the supply of foreign medical books, asking (*a*) whether they can obtain sufficient to meet the demand, and (*b*), if not, whether that is due to shortages abroad or restrictions at home. Of the 19 librarians and 6 booksellers who answered the question, 6 librarians said that they have little difficulty in obtaining sufficient foreign books, or that they receive what they require, though the book may be long in coming, or that they fail to receive only a few unimportant books. The remaining librarians all experience greater difficulty in varying degree. All the booksellers agree that they cannot obtain enough foreign books.

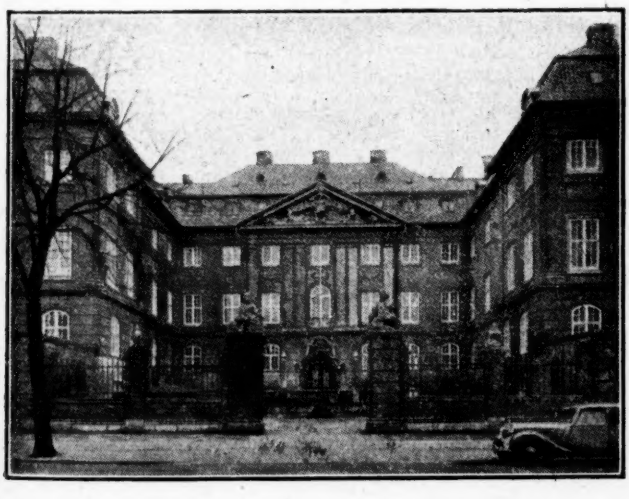
In general American books seem to be the most difficult to obtain, though some replies stress German books. The main reason given for the shortage is restrictions imposed on their import into this country. In addition the demand is greater than it was before the war, partly because of the lack of British books, and partly, so one bookseller comments, because commercial firms are ordering many more. Some replies mentioned that the shortage is aggravated by there being insufficient paper for these books in the U.S.A.

In conclusion we acknowledge with thanks the time and care spent by these publishers, booksellers, and librarians on answering yet another questionary.

DANISH MEDICAL ASSOCIATION

NEW HEADQUARTERS

During the war and the occupation of Denmark by the Germans the Copenhagen headquarters of the Danish Medical Association were blown up; the destruction was so great that little of value remained apart from the building site. The cost of rebuilding on this site seemed almost prohibitive, and plans for rebuilding were still far from complete, when, at the beginning of this year, a valuable property elsewhere in Copenhagen came into the market. In February this property, a photograph of which is here reproduced, was bought by the Danish Medical Association for one and a half million Danish kroner. The Association will take possession on June 1, 1948.



THE PATIENT'S CONSENT

If a medical examination is made without consent it is a technical assault, possibly an aggravated or even an indecent assault, for which the practitioner may be prosecuted in a criminal court, or a trespass for which he may be sued in a civil court. In law, apart altogether from those cases in which medical examination is required in connexion with criminal or civil proceedings, consent is necessary for the examination of a patient in the ordinary course of practice. Where there is any possibility of doubt, consent should be obtained in writing, and in all cases in the presence of disinterested witnesses. An oral acknowledgment of consent is good in law, as indeed is implied consent arising out of the relationship of doctor and patient, but to free the practitioner's mind of anxiety a written statement should be obtained if possible.

The Medical Defence Union has prepared for its members an important memorandum designed to clarify and emphasize the legal position. To obtain consent the practitioner must explain carefully to the patient the need for an examination to arrive at a diagnosis or decide on a line of treatment. No sweeping promises should be made, and any risks in the proposed procedure should not be minimized. If for psychological or other reasons it is undesirable to discuss these matters with a particular patient the information may be placed before some near relative who—preferably still in conjunction with the patient—may give the necessary sanction. The form of consent should be unequivocal, and should be wide enough to enable the practitioner to adopt any further or alternative procedure which may be found necessary. It should also include consent to the administration of an anaesthetic.

In certain cases it is impossible to obtain a valid consent. With the unconscious patient the treatment immediately necessary for the relief of his condition should be given. A parent or spouse in such circumstances may give the necessary authority, and consent for any further treatment may be obtained from the patient after his return to consciousness. A practitioner may be called upon to deal with a patient requiring immediate treatment associated with serious risks if his life is to be preserved, and the conditions may well forbid legal formalities. Here again the practitioner should consult the nearest relatives, and if any treatment more extensive and irrevocable is indicated it should be deferred if possible until full consent can be obtained. A parent or guardian may give valid consent for the treatment of a minor, but if the minor has passed the age of 16, or has reached a state of mental and physical development sufficient to enable him to appreciate what it is proposed to do, his own consent should be added. When it is suspected that a person is suffering from mental or from contagious disease and is likely to be a danger to himself and to other people and cannot or will not be moved, then a parent, a relative, a medical superintendent, a householder, or a hotelier may give authority for examination, but nothing more should be done than is reasonably necessary. The consent of a spouse is not required for the administration of treatment to the other adult partner if the latter has consented; nevertheless, the consent of the other spouse in certain cases is desirable as a further insurance. A master or mistress cannot give a valid consent for the examination or treatment of a servant, and the police cannot insist on the medical examination of a person apprehended, though a person in prison can be examined without his consent by direction of the prison authorities.

Certain model forms of consent are appended to the M.D.U. document. The principal one reads:

> "I . . . of . . . hereby consent to undergo the operation of . . . the effect and nature of which has been explained to me. I also consent to such further or alternative operative measures as may be found to be necessary during the course of such operation and to the administration of a local or other anaesthetic for the purpose of the same."

Much of this may seem to be a counsel of perfection. In the ordinary way if a visit is paid to a practitioner, or a practitioner is called in, consent to a certain amount of examination is implied, and this implication is good in law. Though the requirement is now common in hospitals when operative measures are to be undertaken, written consent to examination and treatment is rarely insisted on in private practice, and

still more rarely are doctors challenged in the courts on the issue of absence of consent. That in itself is a testimony to the common sense of the general body of patients and to the tact and discretion of the members of the profession. But the Medical Defence Union is aware of the legal risks to which the doctor's calling is continually exposed, and to the trouble which the querulous or litigious patient—even though he be but one in a thousand—may cause, and it has performed a useful service in preventing practitioners from being lulled into a false sense of security.

TRAINING OF NURSES

R.C.N. COMMENTS

The Royal College of Nursing has submitted to the Minister of Health a memorandum on the Working Party's Report on the Recruitment and Training of Nurses. It opens by criticizing the Working Party for making insufficient allowance in compiling its data for the handicaps which beset the nursing profession during and after the war. In order to economize nurse-power, the Royal College recommends that a job analysis be made consisting in a study of the hours of care required by various types of patients in different stages of illness, the whole team of health workers being included in the analysis. It would then be possible to allocate nursing staff in the most suitable way.

The Royal College recommends that the hours of working be adjusted so that nurses may be attracted to continue their occupation after marriage. Methods of developing satisfactory staff relationships should be studied and the part-time worker encouraged. It regrets that the Working Party did not suggest solutions to the problem of obtaining adequate domestic help.

Training should be for three years, not the two suggested by the Working Party, but the curriculum should correspond with the Working Party's suggested basic course. Pointing out that the student of nursing cannot be free to learn as she likes, the Royal College believes that the phrase "student nurse status" ought to describe more accurately the student's place than the Working Party's phrase "student status." It believes that there is need for experiment in training and suggests the following scheme :

(1) There should be one wide basic training of two and a half years' duration, corresponding in content to the basic course proposed in the Working Party's Report, with a further six months (three years in all) spent either in general or in public health nursing.

(2) At the end of three years the candidate would have a choice of two special papers, one on public health nursing and one on hospital service.

(3) Some intending public health nurses might elect to enrich their background by obtaining the full qualification in general nursing, proceeding to public health nursing as a post-certificate course.

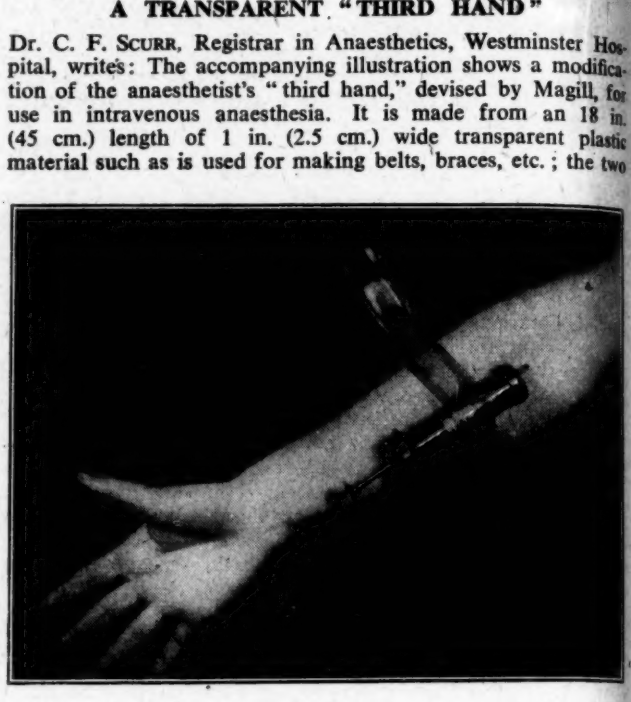
It disagrees with the Working Party's proposals for the organization of nurses' training, considering that nursing education and research should be in the hands of the profession and that responsibility for these should be delegated to the general nursing councils. It strongly opposes the proposal that the Ministry of Health should assume such duties and functions. It considers also that the general nursing councils for England and Wales, Scotland, and Northern Ireland should remain separate bodies.

U Ba Lwin, Principal of the Myoma Co-Education School, Rangoon, is in Britain under the auspices of the British Council until June to study education, teachers' organizations, school medical and dental services, and welfare work. He is visiting social clubs, institutions, W.E.A. centres, and all kinds of schools in London and the provinces. A former student of the London Day Teachers' Training College, he is an active educationist in his own country, holding many public appointments with such organizations as Health Education Committee, Burma National Teachers' Association, Burma Education Association, and the Council of National Education. Trained in scouting at Gilwell, he is now the Burma Chief Commissioner for Boy Scouts and editor of the official organ of the Boy Scouts Association—*Burma Boy*—as well as being a member of the Girl Guides' Council.

Preparations and Appliances

A TRANSPARENT "THIRD HAND"

Dr. C. F. SCURR, Registrar in Anaesthetics, Westminster Hospital, writes: The accompanying illustration shows a modification of the anaesthetist's "third hand," devised by Magill, for use in intravenous anaesthesia. It is made from an 18 in. (45 cm.) length of 1 in. (2.5 cm.) wide transparent plastic material such as is used for making belts, braces, etc.; the two



ends are slipped through a short length of rubber tubing 3/4 in. (1.9 cm.) in diameter, which provides a convenient sliding adjustment.

This device possesses the following advantages : (1) Owing to its transparency, the markings of the syringe and the position of the plunger can be clearly seen at all times. (2) The material used is so flexible that it permits secure fixation of the syringe even in very oblique positions on the forearm.

Reports of Societies

STREPTOMYCIN

A discussion on "Streptomycin" took place at a meeting of the Section of Experimental Medicine of the Royal Society of Medicine on April 13, Prof. H. P. HIMSWORTH presiding. The results of clinical trials with streptomycin in pulmonary tuberculosis and in tuberculous meningitis were brought forward. Prof. CLIFFORD WILSON also introduced the subject of the use of streptomycin in certain non-tuberculous infections, but the results in this field, he said, were not yet ready for publication.

Pulmonary Tuberculosis

Dr. GEOFFREY MARSHALL said that streptomycin had been used clinically in cases of tuberculosis since 1945, but not until the latter part of 1946 was a certain limited supply made available to the Medical Research Council. Reports from America had indicated that it was of considerable value in the treatment of tuberculous meningitis and of acute miliary tuberculosis; inconsistent results were reported in pulmonary tuberculosis. This chronic disease with its long course and its spontaneous remissions and exacerbations was a notoriously difficult condition in which to judge the effect of treatment. Nevertheless, in January, 1947, an investigation was begun in which some 55 young adults with the bronchopneumonic type of tuberculosis affecting both lungs were treated with streptomycin. The results were now being analysed for publication and all that he could do was to give a very rough and rather premature indication. The

dosage employed had been 2 g. a day, given in four injections, each of 0.5 g. in 2.5 ml. of water, in the twenty-four hours. Injections were given intramuscularly; they were rather painful, though not excessively so. Less than 2 g. a day seemed insufficient, and more than that amount seemed to be toxic, large doses causing haematuria and pyrexia and other unpleasant effects. Side effects were relatively slight. The most constant of them was disturbance of vestibular function.

Although streptomycin was very effective against the tubercle bacillus it gradually lost its effect to a large extent in pulmonary disease. After the first six or eight weeks strains were found in the sputum which were resistant. The results with the patients who had pulmonary tuberculosis were not very striking at first, and from the literature he had read he had not expected anything very different. But the longer the trial went on the more impressed he became, because in each of the centres—seven in number—in which this investigation proceeded the patients treated with streptomycin seemed to show a definite advantage over certain controls. This was shown in the conversion of the sputum from positive to negative, remission of pyrexia, and gain in weight. At the end of six months, of 48 treated cases, 24 were improving; on the other hand 6 patients were getting worse and 5 had died.

In another group of cases with acute miliary tuberculosis of the lung without meningitis, 13 out of a total of 24 up to date were doing well, 6 did well for a time but had relapsed, and 5 patients had died, 2 of them with meningitis, one of them six weeks and the other six months after starting treatment with streptomycin. There was no doubt about the value of streptomycin in the treatment of acute miliary tuberculosis, and the clearing of the *x*-ray picture was dramatic. In cases with tracheo-bronchial ulceration the results had been almost consistently good; healing of the ulcers was quite rapid and in nearly every case complete. Streptomycin was not worth giving by inhalation; it must be given by intramuscular injection. It had also been tried out as an "umbrella" for surgical intervention in pulmonary tuberculosis. A short course of streptomycin was given before and after resections of the lung, and in some cases of extra-pleural pneumothorax a protective course was tried. The great obstacle in pulmonary disease—not in other tuberculous manifestations—was streptomycin resistance. In nearly all cases resistant strains were found developing within six or eight weeks of the inception of treatment. Variations of dose-rhythm were now being tried: instead of 0.5 g. six-hourly, 1 g. was given in one injection each day, and in other cases one week on treatment was followed by another week off treatment, and so on. Contrary to experience with the sulphonamides, it did not appear necessary to maintain any special blood-level.

Tuberculous Meningitis

Dr. TREVOR MANN gave particulars of 33 cases of tuberculous meningitis treated with penicillin. In 32 cases the diagnosis was bacteriologically proved. The discovery of streptomycin, he said, had revolutionized the approach to tuberculous meningitis. Formerly little was to be gained from the early recognition of the disease, for there was no specific treatment. The greatest delay in the recognition of the disease occurred in domiciliary practice, where early diagnosis was often beset with many difficulties. Confirmation of the suspicious case should not be difficult in hospital, and a positive or strongly presumptive diagnosis should be made within twenty-four hours.

Several schemes of streptomycin treatment had been tried. At first continuous intramuscular and intrathecal treatment was undertaken, but it was found that many patients derived considerable benefit during intermissions of treatment. A number showed marked improvement in the mental state during a rest period, during which also the anorexia and vomiting attributable to streptomycin ceased. For a short period the intramuscular route alone was used, but owing to poor results this method was abandoned in favour of a scheme of integrated intramuscular and intrathecal treatment, with a rest period after about three weeks. Each case must be treated on its merits, and at any time it might be necessary to modify the basic scheme to suit the needs of a particular patient. Recently the drug had been given at six-hourly intervals, but experimental evidence showed that injections every twelve hours were just as effective. Treatment should be spaced so that the intrathecal injections were given approximately midway between the intramuscular ones.

One-third of the cases showed a good response to treatment; 5 showed immediate and uninterrupted improvement. Out of a total of 15 clinically advanced cases, 13 patients were dead and 2 survived. In the case of one of the survivors the outlook was uncertain; the other was certified as recovered. Out of 13 early cases 5 patients were dead, in 5 the result was uncertain, and 3 were classified as recovered. In an intermediate group of 5, 4 patients had died, but one child had recovered and was doing very well nine months after the cessation of treatment. Psychometric tests on the 5 children who were now well showed them all to be normal. Among the advanced cases 7 were moribund on admission.

Dr. J. RUBIE mentioned a group of 47 cases of tuberculous meningitis treated at another unit. Of these 19 had survived and 8 of these had been observed over a period of 200 days, the others for shorter periods. Of the 28 patients who had died, 8 were less than seven days in hospital, and 14 were under 3 years of age.

Dr. MARC DANIELS said that, as Dr. Mann had remarked, a trial had been made in certain cases of tuberculous meningitis of streptomycin by the intramuscular route alone, under the impression that given intrathecally it had an irritative effect. Alternate cases were treated in that way. During the early months of the trial it seemed that there was nothing to choose between the two series of cases, those having only intramuscular injections doing as well as the others. After the trials had been prolonged, however, it was apparent that relapses were more frequent in these cases.

Dr. D'ARCY HART said that the factor of resistance in pulmonary cases was important in two ways. It might cause a falling off in improvement under treatment, but another consideration was that an early case with a small lesion might be treated with streptomycin and success be attained, so that treatment was stopped, but later the patient might relapse and have a positive sputum, whereupon a strain absolutely resistant to streptomycin might be encountered. It was necessary to exercise great circumspection in treating very early cases.

Dr. GEOFFREY MARSHALL said that those who had brought forward these reports had been conservative and by no means optimistic in their description, but he did not want anyone to go away thinking that streptomycin was not held in very high esteem. It accomplished what no other agent was able to do in any form of tuberculous infection. They were doing all they could to stimulate the authorities to have it introduced in large quantities. Having seen patients with tuberculous meningitis die so uniformly, it was a remarkable experience to go to Dr. Mann's clinic and to see five little children who had recovered and were living normal lives. In pulmonary disease there were cases in which streptomycin tipped the scale—for example, in the type of case in which one desired to do collapse therapy but dare not. The use of streptomycin might make other measures possible. Streptomycin was of real value, and it remained to work out the best way of employing it.

WELFARE OF SPASTICS

A LONDON CONFERENCE

The medical, educational, and social aspects of the problem of cerebral palsy were discussed in London on April 14 at a conference arranged by the British Council for the Welfare of Spastics, an organization affiliated with the Central Council for the Care of Cripples and the British Council for Rehabilitation. Prof. J. M. MACKINTOSH, who presided, said that when this subject was first mooted its development was attended by what he might call a certain amount of Americanism and a dependence upon American experience. The subject was now becoming more of a native growth, and there were signs that in future it would develop on British lines.

Prof. ALAN MONCRIEFF said that the first paper on the subject was in 1861 by W. J. Little, the founder of what was now the Royal National Orthopaedic Hospital, though Shakespeare—

a good clinical observer, among other things—put into the mouth of Gloucester in *King Richard III* an excellent description of the condition.

The strict classification by Prof. Phelps into four or five groups was not accepted completely by neurologists in this country, nor, he thought, in the States. It was not helpful to insist too much on such rigidity. When the ultimate causation of the palsy was considered it was necessary to enter a little into the realm of speculation. In some cases the cause was lack of brain cells or malformation of the brain. A certain number—it was not known how many—were associated with obstetric difficulties. This suggested that some cases might be prevented by improved obstetric care, though it would not be fair to encourage much hope in that direction; the proportion of non-preventable was likely to remain high.

Incidence

It was not known, Prof. Moncrieff continued, how many cases there were in this country. In the United States Phelps estimated that of every 100,000 children born, 7 were afflicted with cerebral palsy, that one of those 7 would die in the early months of life, and that of the remaining 6 two would be so feebleminded as to be ineducable, and the other 4 would be capable of education in the sense of being trained to varying degrees of efficiency by special educational methods. On these figures, in a city of the size of Birmingham or Glasgow there would be between 600 and 700 children aged up to 16 who were in the educable class. That at least was the size of the problem in America; there was some reason to believe from partial surveys that the numbers might be smaller in this country.

Why was it that this problem had only lately come to the fore? To a large extent it was due to the fact that we estimated the level of intelligence by what we saw and heard of a person, and if the muscles that controlled speech were affected a child might be classified as an imbecile, and if at the same time the muscles of the face and limbs were uncontrollable he might be put down as entirely ineducable. The merit of the work of Phelps and Carlson in the States was that they showed that some children who looked like idiots could be trained. Osler said that these people were usually more or less idiots and helpless in mind and body, but he also observed that there were some in whom the brain was not profoundly affected and a greater number who were intelligent. Osler stressed the value of massage and exercises, but massage might do harm. Occupational and speech therapy should be applied. Treatment was an expensive business, but these spastic children represented an obligation from which we could not escape.

According to Phelps, with 700 such children in a city of a million population, 140 would require in-patient and 560 out-patient treatment. At the Children's Rehabilitation Institute, Maryland, for 80 in-patient children there was a staff of one teacher, 8 occupational therapists, 8 physiotherapists, some of them undergoing training, 4 trained nurses, 24 nursing aids, and 6 porters or carriers. If the children could be brought in at an earlier age certain of this staff could be withdrawn. The need in this country was for out-patient diagnostic and instructional centres, based at a hospital, where parents could also receive instruction in the exercises to be undertaken at home, and an in-patient unit in the form of a residential school equipped for long-term stay. Prof. Moncrieff was anxious that, whatever the pattern of the organization, they should concentrate on the pre-school child.

Need for Diagnostic Centres

Dr. PHILIP R. EVANS said that it was important to know the size of this problem, and it must not be assumed that Phelps's figures necessarily applied here. During the next few years there would not be enough people trained and experienced in the treatment of these children, and therefore there would have to be some selection. On humanitarian grounds alone treatment was always worth pursuing, though in the case of children severely affected it must be disappointing. Among distinguished sufferers from cerebral palsy to some degree were, apparently, Dr. Johnson and Byron. Dr. Evans then narrated three cases in detail, in one of which the treatment was unsuccessful, the child ending in a mental deficiency institution; in another moderately successful; while the third promised well. The cases illustrated the tragedy of failure to make an early diagnosis, though it was an extraordinarily difficult diagnosis to make during the first year or eighteen months of a child's life. The problem was to discover damage to the nervous system at an early period.

Mr. GEORGE TOMLINSON, Minister of Education, who opened a later session, said that the treatment of these handicapped children was still in the experimental stage. Those engaged in this work could be assured of his support and the support of everyone in his Ministry. This session was on the educational and psychological aspects and was addressed by Dr. E. MILDRED CREAK and by Miss M. I. DUNSDON, director of research into the problems of educating spastic children, National Foundation for Educational Research. A final session dealt with the social aspect of the problem.

FENESTRATION OPERATION FOR OTOSCLEROSIS

At a meeting of the Liverpool Medical Institution on March 18, with the president, Prof. T. P. MCMURRAY in the chair, Mr. JOHN MCFARLAND read a short paper on the surgical approach to the inner ear.

Mr. McFarland said that in the relief of deafness in otosclerosis a window was made in the bony lateral semicircular canal or ampulla. A tympano-meatal membranous flap was fashioned and placed over it (after Lempert). The surgical approaches for the procedure were described, the speaker favouring the incision and technique of Kettel. Two cases thus treated were shown, and in addition a woman of 38 whose hearing had considerably improved following fenestration by a different technique. A Thiersch graft was placed over the window, the edges of which were impregnated with lead to prevent osteogenesis; the mastoid wound was filled with penicillin powder and closed without drainage. The wound healed by first intention in ten days; the tympanic membrane became normal in five weeks, and the patient heard in six weeks.

In the discussion which followed, Dr. H. ZALIN said that the fenestration operation for otosclerosis provided considerable scope for variation and ingenuity in the method of approach and technique. There was a danger of over-concentration on minutiae to the exclusion of an unbiased assessment of results. The cause of otosclerosis remained unknown. The mechanism whereby fenestration improved hearing in otosclerosis was equally mysterious. A more cynical approach to the problem would do much more good than harm. Devices intended to maintain a continuously patent opening had varied from metal obturators to acrylic inserts. Enthusiastic operators quoted hundreds of cases treated with dramatic effects by one method—and then suddenly switched to a variation. The multiplicity of changes in technique shown by one surgeon alone in the past five years indicated a dissatisfaction with the results not visible in his published cases. The main difficulty was the maintenance of a small stoma in bone which tended to form new bone as part of the essential pathology of the disease. The following facts had been observed at Bootle General Hospital: (1) a post-operative improvement in hearing in a number of cases in the unoperated ear; (2) in successful cases bizarre sensations of sound had been noted; (3) increased sensitivity to pure tone was seldom accompanied by a corresponding improvement in intelligibility.

Dr. Zalin asked: Is it possible that an increase in the sensitivity of the end organ to sound is related to labyrinth trauma alone? Does the cochlea become more sensitive than before operation in the same way that a tooth becomes more sensitive when it develops a dental abscess? Will the end-results be disappointing not because of inadequacy of technique but because the procedure, based as it is on so little scientific knowledge of the aetiology, is possibly doomed from the start?

At the same meeting Mr. J. P. HERON read a short paper on maternal obstetric palsy, and Mr. F. C. DWYER read a paper on tenosynovitis stenosans.

Correspondence

Dr. Dain on the Plebiscite

SIR,—The speech I made at Shrewsbury last Sunday, which received much publicity in the Press, seems to have caused some misunderstanding in the profession. I should like to make it clear that I depart in no way from the careful and balanced statement issued by the Council to every doctor in the country. The Minister of Health's concessions present us with a changed situation which makes the new plebiscite necessary.

I would urge that it is the duty of every doctor to make up his own mind on the facts, and to decide whether Mr. Bevan's concessions go far enough to safeguard the essential professional freedoms of the practising doctor.—I am, etc.,

B.M.A. House,
Tavistock Square,
London, W.C.1.

H. GUY DAIN,
Chairman of Council.

Anti-Rh Serum Nomenclature

SIR,—In the annotation on "Anti-Rh Serum Nomenclature" (Feb. 28, p. 400) you discuss the recent edict of the National Institute of Health in the United States regarding the labelling of anti-Rh sera, namely to use the earlier Wiener Rh–Hr system as standard, with the corresponding Fisher–Race C-D-E notations in parentheses. You regard this decision as a "transitional compromise," implying that eventually the original notations will be abandoned in favour of the Fisher–Race system. However, this conclusion as well as the Board's own analysis fails to take into account all the available facts.[1 2 3 4] I have therefore prepared my own analysis of the situation, and after it is printed in your journal perhaps one of the C-D-E protagonists will attempt a reply. Only by publishing all the facts and both sides of every scientific problem can we ever hope to arrive at the correct solution.

Advantages of the Rh–Hr Nomenclature

1. They have priority, having been proposed by one of the discoverers.

2. They form a coherent and unified system, which readily lends itself to extension to include newly discovered blood factors belonging to the rhesus system.

3. The genetic theory on which the notations are based is amply supported by heredity studies on a large series of families, and statistical studies on the distribution of the types in the population. On the other hand, there is no evidence against the theory.

4. The notations are simple to use in writing and orally.

5. The notations clearly separate the designations for phenotypes and genotypes, and for agglutinogens and genes, leaving no room for ambiguity.

6. The phenotypes' names clearly indicate what tests have actually been made and what reactions were obtained, without including symbols for hypothetical blood factors which have not been tested for, and for which there is no clear experimental evidence.

7. The notations clearly indicate the relationship to the original rhesus factor, and separate the Rh–Hr types from other independent systems such as the A-B-O groups and M-N types.

8. For individuals who already know and understand the four blood groups and the three M-N types, the Rh–Hr notations are easy to learn almost instantaneously.

9. The notations lend themselves readily to clinical use, since the capital R's and small r's clearly indicate which types are Rh_o-positive and which are Rh_o-negative.

10. They take advantage not only of the reciprocal relationship between the Rh and Hr factors, but also of the special clinical, serologic, and genetic position of factor Rh_o.

11. They do not involve any incorrect assumption of one-to-one correspondence between genes and partial antigens.

12. They are self-sufficient.

13. None of the symbols used in the Rh–Hr notations have previously been applied to other agglutinogens.

14. The notations as used by workers throughout the world are uniform.

15. Simple tables are available for the Rh–Hr types and their genetics.

16. They are the *only* notations used in most standard textbooks, encyclopaedias, dictionaries, and articles.

Supposed Disadvantages of the Rh–Hr Notations

1. That they take longer to teach. Where this seems to be so, it is merely because one must *understand* the Rh–Hr types in order to use the Rh–Hr notations intelligently, and to teach them.

2. That they have been changed several times. This is true, but none of the changes are basic or really upsetting. Moreover, one need only learn the present nomenclature to understand the subject. The changes have served to improve and streamline the nomenclature, and are no more objectionable than the changes made from year to year in order to improve the performance and appearance of automobiles. One does not have to study the entire evolution of the automobile from 1905 to date in order to learn how to drive one's 1948 model.

Supposed Advantages of the C-D-E and Rh_1-Rh_2-Rh_3 Notations

1. Many workers have the false impression that they are easier to "learn" and teach. The reason for this is that one can speak about C-D-E and $Rh_1Rh_2Rh_3$ at once, without having any real understanding of the subject. These notations therefore serve as a convenient cloak for lack of knowledge and understanding, and actually discourage any desire to acquire such an understanding.

2. They make use of a one-to-one correspondence between genes and blood factors. This supposed advantage is based on the wrong concept that such a one-to-one correspondence must exist, which is not true.

3. They are gaining more adherents. This is true only because the protagonists of this system are teaching it, and because the new regulation passed by the National Institute of Health has forcibly called these notations to the attention of workers. The C-D-E and Rh_1-Rh_2-Rh_3 notations will naturally attract some adherents, just as the Moss and Jansky systems each gained their adherents. The resulting unnecessary confusion may take many years to clear.

Disadvantages of the C-D-E, Rh_1-Rh_2-Rh_3, and other Systems

1. They lack priority.

2. The genetic theory on which they are based is purely theoretical; there is no experimental evidence to support it, nor does it lend itself readily to experimental attack. On the other hand there is some statistical evidence based on the analysis of the distribution of the Rh–Hr types in the population that tends to refute the linkage idea.

3. The notations are cumbersome to use. For example type rh becomes small-c, small-d, small-e over small-c, small-d small-e. An error in printing in which a capital letter is substituted for a small letter or *vice versa* could prove fatal. Thus if anti-d is written instead of anti-D this would be very serious, but if anti-rh_o is written instead of anti-Rh_o the intention of the writer would still be obvious.

4. There is no clear separation of phenotypes and genotypes. The use of designations for "the most likely" genotype without indicating clearly all the time what is intended conveys to the reader the false impression that the actual genotype has been determined. The writings of users of these notations continually confuse genotypes with phenotypes, and it is impossible to tell from the designation used what tests have actually been made.

5. The letters C-D-E give no indication of any relationship to the rhesus system and convey instead the erroneous impression of a relationship to the A-B system of blood groups.

6. To learn the other notations suggested one must start from scratch, and all one's knowledge and understanding of the A-B-O and M-N systems is wasted.

7. The notations are too awkward for clinical use. There is no clear indication in the notations which bloods are Rh_o-positive and which are Rh_o-negative.

8. While some of the proposed systems of notations take advantage of the reciprocal relationship between the Rh and Hr factors, none takes into account the special clinical, serologic, and genetic position of the factor Rh_o.

9. The notations are not self-sufficient or self-explanatory. Thus users of the C-D-E notations are compelled also to use the Rh–Hr notations, as can be seen by consulting the papers of Fisher and Race who originated the C-D-E notations.

10. The symbols C and E have already been applied to other agglutinogens in human blood. The introduction of the use of these letters for agglutinogens of the rhesus type would therefore result in ambiguity.

11. There is no uniform understanding among users of the C-D-E notations as to terminology for the phenotypes. Thus blood reacting with "anti-C," "anti-D," and "anti-c," but not with "anti-E" is variously designated as CDe, or CcDe, or CDe/cde, etc. Under the Rh–Hr notations, the blood would be designated

simply as Rh_1rh, a name which clearly indicates positive reactions with sera anti-rh′, anti-Rh_0, and anti-hr′, and negative reactions with anti-rh″.

12. No simple unified tables regarding the types and their heredity involving the other proposed systems of notations are available for use.

13. The C-D-E and other proposed notations are not mentioned in most standard laboratory texts, and are therefore unintelligible to the average reader.

—I am, etc.,

New York. A. S. WIENER.

REFERENCES

1 Wiener, A. S., "Theory and Nomenclature of the Rh Types, Subtypes, and Genotypes," *British Medical Journal*, 1946, **1**, 982.
2 —— "Rh System in the Chimpanzee," *Science*, 1946, **104**, 578.
3 —— "Nomenclature of the Rh Factors," *Lancet*, 1948, **1**, 343.
4 —— *Blood Groups and Transfusion*, 3rd edition, 1943. C. C. Thomas, Springfield, Ill.

Scepsis Scientifica

SIR,—In his interesting address Prof. Geoffrey Jefferson (Feb. 28, p. 379) asks, "Could anything be learned from the structure and workings of the brain?" From the context this seems to refer to the relations of the brain to mind. He answers the question by saying that "to this old question we have no modern answer."

The *Proceedings of the Royal Society of Edinburgh*, Section B (Biology), 1943–4, Vol. 62, Part I, p. 86, gives at least one "modern answer."—I am, etc.,

Bristol. R. J. A. BERRY.

*** The reference is to an address entitled "Some Recent Advances in the Study of the Brain as the Implement of the Mind" which was read by Prof. Berry to the Royal Society of Edinburgh on June 5, 1944.—Ed., *B.M.J.*

SIR,—I read Prof. Geoffrey Jefferson's article (Feb. 28, p. 379) with such keen appreciation and enjoyment that it seems ungrateful to suggest that the issue might have been made clearer in the final paragraphs. The use of words as an economy of thought, to which the human race owes so much, is sometimes more confusing than helpful. Prof. Jefferson writes, "There are other large fields of knowledge besides Science." The meaning of these words as they stand alone is not very clear; but the important underlying meaning, obvious from the context, is that scientific technique is suitable for the investigation of some but not all of our total experiences.

The confusion arising from the use of the term "Science," at one time in its literal sense of knowledge, and at another in its acquired sense of a definite technique (deduction combined with induction, with special emphasis on the appeal to experience), has established a sort of vicious circle. Science in its meaning of scientific technique has had dramatic triumphs in the investigation of certain fields of our total experience, such as chemistry and physics, and has given us valuable knowledge of these subjects. These great successes naturally raised hopes that Science would be equally efficient in supplying knowledge in all other fields. But if we employ a word which means by derivation "Knowledge," not only for the knowledge obtained by a special technique but also for the technique itself, it is an easy step by equating all knowledge with the special technique to prejudge the whole issue and to obscure the truth, emphasized by Prof. Jefferson, that scientific technique as a means of winning knowledge is not infallible nor even suitable in all fields of our total experience.

This belief in the total infallibility of scientific method has become firmly established in the popular mind, largely owing to the dual meaning referred to above which has become attached to the term "Science," and it is this misconception which is threatening our civilization with disaster to-day.

As scientific technique invades the higher fields of biology and psychology it is compelled willy nilly, in order to maintain its output of success, to appropriate more and more to its use those techniques such as intuition and introspection which are suitable to these higher levels, and we are sometimes surprised to realize that these higher techniques have now been quietly incorporated in the scientific method. Unfortunately the highest techniques of all, meditation and love, have not yet been officially adopted, although to the writer it would seem just as much as error of technique to attack the problems of, for instance, social psychology by the scientific method, unaided by meditation and love, as to endeavour to analyse or weigh a chemical substance by meditation and love unaided by the scientific method.

Of course there is not the slightest objection to combining all techniques, including meditation and love, under the heading of "Scientific Technique" if we wish; but we might then just as well call this all-embracing technique "Religion." This brings us back to our old friend and enemy, the use of words.—I am, etc.,

London, S.E.21. M. H. K. KANE.

Temperature Records and Ovarian Activity

SIR,—The letter by Dr. P. M. F. Bishop (April 10, p. 706) reflects certain common misconceptions concerning the significance of temperature records in the study of infecundity. May I attempt to clarify the position within the space available lest a valuable clinical method be employed without due regard for either its potentialities or its limitations? Dr. Bishop asks four questions.

Question No. 1: Does the basal temperature pattern denote whether ovulation has taken place?—The occurrence of a diphasic temperature cycle indicates that a phase of oestrogenic secretion has been followed by a phase of progesterone secretion. The rise of temperature caused by progesterone is usually, but not invariably, associated with, or follows upon, ovulation. But progesterone may be secreted without actual liberation of an ovum (e.g., in the case of retained ova or of luteal cysts), so that the rise is no absolute proof of ovulation. Conversely, ovulation may occur without luteinization, so that the absence of the typical rise in temperature may not prove the absence of ovulation. The condition of the endometrium also depends on ovarian secretion, not on ovulation itself. But the association between ovulation and a diphasic temperature curve is so high that in practice it has been used by a number of independent workers for timing of intercourse or of artificial insemination.

Question No. 2: Can it indicate exactly when ovulation takes place?—Experience with artificial insemination and with laparotomies timed in relation to the temperature cycle (cf. Greulich, W. W., Morris, E. S., and Black, M. E., *Proc. of the Conference on Problems of Human Fertility*, 1943, p. 37) show that ovulation, which of course is not necessarily an instantaneous process, tends to coincide with the thermal shift from the low to the high level. The accuracy of timing depends among other factors on the rapidity of the rise and is, therefore, less reliable in cases where the shift is of the gradual ("staircase") type.

Question No. 3: What information does it provide as to the degree of ovarian activity?—Injection of natural oestrogens tends to lower the level of the temperature. In women with anovular cycles and a high level of oestrogenic secretion (e.g., in certain cases of glandulocystic hyperplasia or ovarian cysts) the waking temperature remains permanently at or below the level characteristic for the follicular phase; injections of progesterone raise the waking temperature to the level normally prevailing during the luteal phase according to the dose given. Again, during the early phase of pregnancy when the progesterone level is high the temperature is also high. When the progesterone level falls during pregnancy (e.g., in imminent abortion, or during the fourth month of gestation) the temperature drops, but rises again in response to progesterone injections. These are but some of the facts which indicate that the actual level of the waking temperature, as well as its relative variations, reflects quantitative variations, and not only the phases, of ovarian activity.

Question No. 4: Is it likely to give more accurate information if the temperature is recorded rectally than if it is taken by mouth?—The oral temperature is apt to give occasional deceptively low readings, due to extraneous factors such as mouth-breathing, to which the rectal reading is not susceptible. This means that in any individual case the oral temperature may show a misleading value, so that the subject might miss a critical date, if I may use this expression.

Dr. Bishop also contrasts the 500 records collected at the Fertility and Endocrine Clinic of the Chelsea Hospital for Women during the past three years with the large number to which I referred. Perhaps there is some confusion between number of women observed and number of cycles recorded. It has been my practice to ask my patients to record the waking temperature for not less than three months, and quite generally until they have reached the fourth month of pregnancy or their case has been discontinued. In one case illustrated in the original communication (*Lancet*, 1945, **2**, 663, Fig. 6) 26 successive cycle records from one patient were reproduced, and more than 1,500 records gathered from private practice were consulted in developing the argument of that communication. Of course since then the work has been much extended by myself and others. It is a fact long recognized that successive menstrual cycles differ from each other with respect to occurrence of ovulation, time of ovulation, duration of luteal phase, etc., and it is quite insufficient in the treatment of infecundity to record only one cycle or occasional

cycles. Continuous records are part of the proper background for the diagnosis and treatment of infecundity, also for the supervision of pregnancy in its early stages.

Concerning the statistical evaluation of the extensive data available some results have already been published (see Fig. 2 in the paper quoted; also Figs. 100 A-D inclusive, in Siegler, S. L., *Fertility in Women*, London, 1944; also Palmer, A., 1942, *Surg. Gynec. Obstet.*, 75, 768). These show mean *rectal* readings on suitable grids. Further statistical evaluation of data will be useful in some respects, but Dr. Bishop overrates the function of statistics if he thinks that the statistical evaluation of temperature readings taken by themselves can solve such questions as to whether ovulation is denoted by any given pattern. They can only be used for this purpose when related to some different and direct indicator of ovulation such as findings at laparotomy.

I would add that my experience is not "unique," as can be readily ascertained by anyone who cares to avail himself of the extensive literature on the subject which has come into being in the last ten years.—I am, etc.,

London, W.1. MARY BARTON.

Identification of Medical Documents

SIR,—It appears to me that Prof. Lancelot Hogben and others (April 3, p. 632) are trying to make a mountain out of a molehill. We are, presumably, on the eve of a National Health Service. If code numbers can be supplied to death certificates, why not to birth? These could be used for the medical histories.

I have been told that Records Officers have experienced difficulty in obtaining National Registration Card numbers, but after 30 years' experience of giving identification numbers to my patients I am convinced that where the Records Officer may fail the doctor never will if he is worth his salt.—I am, etc.,

Halifax. A. GARVIE.

Treatment of Phlebothrombosis

SIR,—Mr. Hamilton Bailey's article (March 27, p. 594) is both timely and welcome, and it should serve as a stimulus to the earlier detection of phlebothrombosis. It would be a pity, however, if the impression is gained that all such cases should be treated by interruption of the vein.

Since 1944 I have been on the look-out for this condition and have performed the operation in a number of cases. I have been impressed at the number of times the condition can be spotted if one remembers to look at the legs after the fourth post-operative day. My own feeling is that the large majority of cases are best treated with anticoagulants. I have tried to define, for my own benefit, the indications for operation as against anticoagulative therapy, and I have come to regard them as follows:

1. Where anticoagulants are not available—this was so in three battle casualties.
2. Where haemorrhage follows the use of anticoagulants. In a recent case of spreading thrombosis and pulmonary infarction on the 7th day following prostatectomy, profuse haemorrhage occurred from the prostatic bed when heparin was given.
3. Where anticoagulant treatment would have to be maintained over many months and active leg movements are prohibited, as is the case where phlebothrombosis develops during heart disease.
4. Where there is recurrent phlebothrombosis—e.g., in 1943 and 1944 repeated small emboli with pulmonary infarction occurred at intervals of a few months in a serving soldier. Each attack was severe enough to require hospitalization. Venous interruption has given him complete relief.
5. Where there is obvious arterial disease contraindicating anticoagulants. In one case I have seen cerebral haemorrhage follow their use.
6. Where extensive ulcerating lesions are present—e.g., ulcerative colitis from which haemorrhage is to be feared.

In the actual operative procedure I have made it a practice to expose the external iliac vein and not the femoral. There is some evidence that the collateral circulation is more efficient here than below Poupart's ligament.

I have found a glass tube of a diameter a little less than that of the external iliac at this site to be the most efficient extractor of clot. The tube must be angulated 135° at about 6 in. from the tip. A powerful suction apparatus is required, and the glass tube gently pushed up inside the vein, thus detaching the clot where it is adherent to the intima. As the clot gradually becomes free it can be watched passing up inside the glass tube until the upper limit of attachment is reached, when it is suddenly sucked down the tube, often in one piece.

It is wise to have the patient half sitting-up during this stage of the operation, and as soon as the clot is free he should be instructed to hold his breath so that the blood flows back down the vein. Pain in the calves usually disappears within 24 hours of the operation.

I have never regretted carrying out this operation, though I have once regretted that I did not tie the opposite vein as well. At the same time I think it would be unwise if the vein was ligated in every case of deep thrombosis. In the majority of cases all that is needed is treatment with heparin and dicoumarol. The difficulty which arises is to determine the cases in which vein interruption is preferable.—I am, etc.,

Bristol, 3. W. M. CAPPER.

Harrison's Grooves

SIR,—The article by Drs. J. Naish and H. R. E. Wallis (March 20, p. 541) on the significance of Harrison's grooves is an interesting work of research into the historical aspects of the problem. It is rather difficult, however, to agree with them in their explanation of the mode of occurrence of this clinical feature. If the ribs buckled along the line of separation of the "vertebro-sternal" from the "vertebro-chondral" ribs such an effect would be produced maximally in cases where the intercostal muscles are strongest and the negative intrathoracic pressure most evident. In complicated pneumonia there is very little alteration in the intrathoracic negative pressure; certainly there is no increase in the elastic recoil of the lungs in this disease. If bronchiectasis followed the pneumonia a varying amount of elastic tissue will have been lost, leaving the patient with less elastic tissue than previously. In any case if one is concerned chiefly with a disproportion between the negative pressure in the thorax and overacting chest muscles, one is still met with the fact that the diaphragm helps to fix the anterior portions of the lowest ribs, whose lateral portions tend to move outwards.

I agree with Dr. R. Good (April 10, p. 707) that an analysis of the problem should include a consideration of the question of position, though it is felt that he does not sufficiently stress the significance thereof. On the other hand it is difficult to agree that feeding is a matter of much importance. Feeding *per se* affects 100% of children; Harrison's grooves are not found in more than about 10%, and in any case they develop more commonly in children after illnesses in which anorexia, and therefore a diminished food intake, are clinical features. This of course does not rule out the part played by abdominal distension whether by aerophagy or by fermentation, in the intestines of a weakened infant.

However, I think more light will be thrown upon this clinical sign by considering in greater detail the incorrect posture in which many patients are nursed during several phases of their illnesses. The so-called "upright posture" frequently consists of flexion of the head and neck, of the upper part of the chest upon the lower, of the abdomen, of the knees, yet minimal flexion of the hips. It is enforced yet concealed by the tucking in of the bedclothes, which are rendered heaviest and tightest under the chin and over the shoulders in a patient who has partly slipped down—i.e., the custom of "tidying the bed" or making the patient "comfortable."

Where the best of nursing facilities exist—and certainly in the best of children's wards—such a posture is practically unknown. In many other children's hospitals, and in more than one adult ward, if understaffed, this "decubitus *en flexion*" has been encountered with somewhat more than slight frequency. It explains why *lumbar* rather than *sacral* pads of oedema sometimes develop in patients suffering from cardiac failure who are treated in bed in this manner.

An examination of conditions obtaining in the patients' homes will support this point of view. Especially in the case of the poorer ones—from which many of the patients observed by Drs. Naish and Wallis came—and particularly where the sick child has been nursed in its parents' bed because other facilities are even less suitable, the posture described above is the usual finding. It is perpetuated when the debilitated convalescent child or one suffering from repeated attacks of asthma or recurrent mild infections is made to rest in a high and large adult's arm-chair with only his head, shoulders, and sacrum in contact with any support.

The result—as Dr. Good pointed out, displaces anteriorly and outwards the soft lower ribs by the action of the tense upper abdominal contents. It diminishes respiratory excursion and mini-

mizes the power of the abdominal muscles in the action of coughing. In this flexed position, if the rectus abdominis exerts any action at all, it tends to pull the 5th, 6th, and 7th costal cartilages *forwards* as well as downwards. Only when the child completely recovers from his pulmonary or other disease and is able to get about actively does the rectus abdominis, aided by the transversus thoracis, act in a truly vertical direction anatomically. But not all the child's natural and unbiased instincts are sufficient to compensate for the errors committed upon him during his periods of enfeeblement by his elders—and "betters."

Perhaps one piece of evidence to support this explanation is the fact that Harrison's grooves, although commonly found in children who have chronically infected tonsils, do not occur particularly in those who have had diphtheria or meningitis—cases nursed in bed in the supine position. Lastly, it may be mentioned that one's study of human beings is necessarily incomplete if while pursuing such a study one does not oneself also consider them in the normal habitat—namely, the home. If one did it would soon become manifest that the "upright attitude" of man, though often "assumed," is not always "true."—I am, etc.,

London, N.4. I. H. MILNER.

Thiouracil in Toxic Goitre

SIR,—I have been tempted to enter the lists on the discussion of the value of thiouracil in thyrotoxicosis following on the paper by Drs. Harold Cookson and F. H. Staines (Nov. 15, 1947, p. 759), the letter by Mr. Geoffrey Keynes and Dr. J. W. Linnell (Dec. 13, p. 971), and the reply by Drs. Cookson and Staines (Jan. 7, p. 123). In the past 30 years I have had an extensive experience in the surgery of the thyroid gland, and since the introduction of the "thio" drugs I have used them extensively in two ways: (1) as short-term treatment in preparation for operation of nodular or, as I prefer to term them, toxic adenomatous goitres, and (2) as long-term treatment for the acute primary hyperplastic toxic goitres, practically all patients being ambulant. I would draw particular attention to these two classes, as the adenomatous and old colloid goitres with secondary thyrotoxicosis are unsuitable for long-term treatment with the prospect of cure, as they invariably relapse and, provided they are operable, should be subjected to surgical treatment.

With acute primary thyrotoxicosis, however, the position is very different—in fact just as different as the pathological condition of the glands in primary and secondary thyrotoxicosis. In my last published report on the control of thyrotoxicosis by methyl thiouracil (*Med. J. Aust.*, 1947, **2**, 93) I presented a detailed and critical survey of 84 patients with long-term treatment by methyl thiouracil, which I find is the drug of choice. There were fifty patients of the acute primary type in whom treatment had been concluded for varying periods and fifteen in whom it had not been concluded. Of these, four had been subjected to operation—one because she was subsequently found to be a secondary type, one for cosmetic purposes, and two because of reactions to the drug. There were nine patients with toxic adenomatous glands who had been on long-term therapy for various reasons, and three of these had finally been brought to operation. There were ten recurrent primary cases following either operation or *x*-ray therapy, of whom six had their treatment concluded with satisfactory result. One was referred for further deep *x*-ray therapy and three were still under treatment. There were no deaths, and only in eleven cases were there any reactions which could be classed as toxic. In four of these I do not consider that the drug was an aetiological factor, but as the various troubles developed during treatment they were included. In only three cases was treatment suspended, operation being carried out in two of them and the third referred for deep *x*-ray.

As Mr. Keynes mentioned, surgery in expert hands carries with it a mortality of less than 1%, but this depends not only on the surgeon but on his team, as the anaesthetist plays a very important part, as do the nurses concerned in the immediate post-operative course, and I still believe the average surgeon in this field has about a 5% mortality. Surgery carries with it other than mortality risks, such as laryngeal nerve paralysis, hypoparathyroidism, and residual toxicity, and if 80% of cases are eventually restored to complete normality by surgery it is good work. In my own cases of acute primary thyrotoxicosis I now subject them all to long-term therapy with methyl thiouracil and necessary adjuvant therapy, as I have laid down, for in 87% of cases apparent cure can be obtained, and if surgery is decided on later it can be carried out with safety. My own experience confirms that of the Lahey Clinic in that I have not had a fatality in over 300 cases of toxic goitres since preparation has been carried out with thiouracil.

Mr. Geoffrey Keynes and Dr. Linnell give a very caustic criticism of the results obtained by Drs. Cookson and Staines, and not without some justification, as they compare very unfavourably with those published by other workers (possibly because only ten of their 95 cases were "smooth" goitres), but I feel that their implied contention that all cases of thyrotoxicosis should be operated on is not correct, and even in the Lahey Clinic one can see they are departing from this rigid standard laid down in their early experience of the "thio" drugs that surgery was the only cure. I would also point out that most workers in this field experience too many toxic effects, due, I consider, to too high dosages, insufficient clinical observation of the patients, adherence to a standard and not an individual routine, neglect of adjuvant therapy, and persistence with long-term treatment in cases of secondary thyrotoxicosis.

In over 500 patients treated with "thio" compounds or under treatment, whether short- or long-term, I have had one case of agranulocytosis only, and less than 7% of toxic manifestations, which are mainly so mild as not to interfere with treatment. The average time of treatment is about 7 months, and so far only 1% of recurrences have occurred, as contrasted with the 48% of a combined series of reports from U.S.A. and the 16% of Drs. Cookson and Staines. Dr. A. Wilson and Prof. H. P. Himsworth so far give the most encouraging results from Great Britain in the field of long-term treatment with thiouracil or methyl thiouracil, and it is hoped that other workers will publish their experiences, as it is only by free exchange of ideas and results that we can determine what is best for each individual patient. After all this is what constitutes our ultimate responsibility to the general public.

I would like to support the remark of Drs. Cookson and Staines that antithyroid drugs have established themselves as a most valuable addition to the methods of treatment of toxic goitre, and in certain types as the method of choice, and commend it to Mr. Geoffrey Keynes and Dr. Linnell for their further unbiased consideration.—I am, etc.,

Sydney. HUGH R. G. POATE.

Calciferol in Tuberculosis

SIR,—Although calciferol has become established as a valuable therapeutic agent in lupus vulgaris, its use in the treatment of pulmonary tuberculosis is regarded with diffidence. Literature on the subject is scanty, but the report by Macrae (*Lancet*, 1947, **1**, 135) appears to justify caution with this method of therapy. He records disastrous results to two patients undergoing treatment for lupus. One had a fatal haemoptysis, the other developing active disease in the lung, which fortunately subsided after the calciferol was withheld. Neither of these patients exhibited evidence of pulmonary involvement prior to the commencement of treatment.

In the treatment of established phthisis, however, calciferol may be of value and the dangers of its administration exaggerated. Dr. R. Grenville Mathers (March 20, p. 569) observed clinical improvement in six cases of advanced pulmonary tuberculosis treated by this method. No adverse toxic effects were noted. I have obtained similar results in ten patients, giving them weekly injections of 500,000 units for periods varying from six to twelve weeks. Moreover I noted a greater clinical and radiological improvement when this treatment was combined with the administration of "promanide." All the cases were of the very advanced and febrile type, and progress has exceeded that which I would have expected from bed rest alone.

Results so far have led me to conclude that calciferol may become a useful adjunct to the treatment of phthisis, but the uncertainty of its action does not yet justify its application to those cases suitable for more orthodox measures. If calciferol acts by stimulating the defence mechanism of the tissues it may prove a more effective means of treatment when used in conjunction with chemical agents acting on the tubercle bacillus itself, such as streptomycin, sulphetrone, or sodium *p*-amino salicylate. The improvement seen with promanide lends support to this suggestion. Further research into the subject is necessary and it would be interesting in the meantime to hear from others who may have used this drug for the treatment of phthisis.—I am, etc.,

St. Helens, Lancs. D. S. HAYES.

Hospitality for Overseas Visitors

SIR,—The Empire Medical Advisory Bureau has now been set up by the Council of the British Medical Association (*vide* Annual Report of Council, 1947–8, *Supplement*, April 10, p. 68), and one of the aims of the Bureau is to arrange for private hospitality in doctors' houses to medical visitors from overseas, particularly those from the Dominions and Colonies. Several medical men, despite present-day difficulties of rationing (and off-rationing !), have expressed a desire to meet and entertain in various ways overseas postgraduate students, who are often at a loss for friendly contacts, particularly in the early stages of their stay in this country. A week-end in the country or by the sea would be a delight and refreshment to men who spend their week-days in unaccustomed grimy cities.

May I appeal through your columns to the generously hospitable instincts of our members to help make our overseas visitors welcome in their visits "home." I shall be very glad if doctors willing to offer hospitality to our overseas visitors for one or two days or even longer would write to me stating what they are able to offer.—I am, etc.,

Empire Medical Advisory Bureau,
B.M.A. House,
Tavistock Square,
London, W.C.1.

H. A. SANDFORD,
Medical Director.

National Marriage Guidance Council

SIR,—The National Marriage Guidance Council relies largely on the help and advice of the medical profession in its effort to educate the public in preparation for marriage as well as in the important work of reconciliation in the cases of broken homes and marriages. The interest of practitioners and specialists, who can subscribe to the principles upon which the National Marriage Guidance Council bases its work, is now solicited even more urgently. Local B.M.A. Groups, at one of their meetings perhaps, would be willing to accept the services of a speaker on the medical aspects of marriage guidance, and a discussion helpful to both sides might be arranged.

The Council would be glad to arrange for talks by medical representatives of the National Marriage Guidance Council if a request for such a talk is sent to the Secretary of the Medical Committee, National Marriage Guidance Council, 79, Duke Street, London, W.1.—We are, etc.,

NOEL HARRIS,
Chairman, Medical Committee.
ETHEL DUKES,
Secretary, Medical Committee.

London, W.1.

A Diploma for G.P.s

SIR,—Mr. A. E. Porritt (April 10, p. 673) remarks, "The war led to an underlining of the values of specialization from both the prestige and the financial angles . . . to a warped perspective on the relative importance of general practice, as compared with specialization. . . . It is exceptional among recently qualified applicants for resident appointments to find one in twenty who expresses the ultimate intention of becoming a doctor."

This tendency, which was of course in evidence long before the war, is fraught with disastrous possibilities for the future of family doctoring, and many thoughtful general practitioners are realizing that it is liable to be accelerated if and when the National Health Service comes into being. On the one hand, when hospital work is adequately paid it will be much easier to specialize and so to avoid the "drudgery of general practice" and to gain a larger income than can be obtained in family work. On the other hand, there will be no inducement for a general practitioner to rise above a certain level of mediocrity. On the contrary, the more time and trouble he gives to his cases, the fewer potential patients can he accept on his list, and the lower his income.

The scales are being heavily weighted in favour of rushed work, and the doctor able to do his own lumbar punctures, blood counts and blood sugars, capable of reading his own electrocardiograms, or even of removing an appendix on occasion, will become as extinct as the dodo. The prizes will go to those with a superficial skill at spot diagnoses.

It seems to me very essential, if we are to preserve the best features of family practice—not only in such technical matters as I have suggested, but, far more importantly, in an understanding of the "human approach," and in the possession of a broad general ability—that there should be a potentiality both of prestige and financial reward in general practice. There should be some criterion by which a general practitioner can be recognized as outstanding, much as a physician gains prestige from his honorary appointments or his Fellowship.

Neither the F.R.C.S. nor the M.R.C.P.—not even an M.D.—are relevant to this case. They do not judge the qualities necessary. But it should be possible to institute some diploma which could only be gained by a man who has had, say, ten years in general practice and kept up with advances in medicine, while eschewing mumbo-jumbo, rule of thumb, and quackery. If the possession of such a qualification carried a high financial reward—say, a double capitation fee—it would enormously alter the feelings of the best newly qualified men about general practice, and would attract them where they are needed, instead of their swelling the ranks of the minor specialists.

Such a diploma should not be obtainable by cram courses at hospitals; it should not involve a knowledge of the rare diseases. It would judge qualities which are difficult to test, but it could be done. Without it the G.P., in a generation of State practice, will degenerate into a filler of forms and a prescriber of placebos.—I am, etc.,

Ashtead, Surrey.

W. EDWARDS.

The Minister's Assurances

SIR,—The august College of Physicians has again taken the field and has brought about a trickle of "assurances" from the Minister. What do these amount to? A "concession" on the subject of partnerships—a small matter—and an assurance that a whole-time salaried service shall not be brought about by regulations, but that an Act would be necessary. This does not appear to me to be much of a safeguard, since it is obvious that this Government or a future similar one would not hesitate to pass such an Act and so bring about their desired service, and would have little difficulty in doing so. For us to oppose such an Act would be much more difficult than to stand firm about it now when we do possess the power. Incidentally, the Minister offers nothing as regards direction or the goodwill of our practices, both of which are vital.

Our net gains, then, from these "conciliatory" assurances would seem to be *nil*, and we are likely to lose from their possible weakening effect on some in our ranks. I am convinced that nothing short of insisting on our four cardinal points as an absolute minimum will be enough to preserve our freedom—and even those, I think, will prove to be insufficient.—I am, etc.,

Thame, Oxon.

C. H. BARBER.

Constructive Scheme

SIR,—In view of the apparent impasse between our Negotiating Committee and the Ministry of Health, destructive criticism having taken place on the part of the medical profession, I consider that a constructive scheme is now called for. The following scheme is submitted to replace the medical part of the National Health Service Act:

(1) All people with salaries up to £600 per annum and their dependants should receive free general-practitioner medical service on an extension of the present national health panel service.

(2) There should be free consultant and hospital service available to all patients without financial burden who come into category (1) referred to above.

(3) A contributory insurance scheme should be inaugurated by which all people with incomes of £600–£1,200 per annum should have specialist and hospital or nursing-home treatment free from expense.

(4) The State should take over all voluntary hospitals in such districts where it is deemed desirable by the public and the board of management. (It is wrong that in a poor district the less fortunate should have less efficient treatment from their local hospital because finance cannot afford the first-class equipment available in other hospitals with larger funds at their call.)

This scheme would eliminate all the contentional points arising between the Minister of Health and medical men, and would preserve the freedom so precious to our profession.—I am, etc.,

Leicester.

FRANK T. DOLEMAN.

Committee of Those Who Accept

SIR,—I quite agree with the suggestions put forward by Dr. Edward F. Hunt (April 3, p. 660). As one who is quite prepared to work in the new Service, I do feel the B.M.A. should appoint a committee on behalf of those thousands of doctors who voted "Yes," the majority of whom are active members of the B.M.A. Besides the doctors who are already prepared to take part there are probably many waverers who at this moment are feeling a certain amount of apprehension at the request for "£100 as a first instalment."

There are many minor points to be cleared up before July 5, points such as mileage allowance and the replacement of stock and drugs used daily during surgery hours. As Dr. Hunt states, there is complete freedom of choice as to entry into the new Service, and we members of the B.M.A. feel that we have a right to be represented by a committee on a high enough level to discuss these matters of detail with the Ministry.—I am, etc.,

Staines, Middlesex HENRY BERGH.

Doctors and Dentists

SIR,—We feel that one facet of the dispute has not received sufficient notice. We mean the position of our dental colleagues. We feel that no final settlement should be agreed which is not acceptable to the dental profession too. They are as much part of the scheme as we are, and until their just demands have been fulfilled we feel the medical profession should continue to stand out.—We are, etc.,

M. H. EVANS.
Chippenham, Wilts. A. P. HICK.

Position of Assistants

SIR,—Although assistants in general practice supported their employers loyally in the plebiscite—at the same time expressing their personal disapproval of the Act in its present form—many doubts now seem to be arising in that section of the profession. The regulations outlined in the *Journal* of April 3 (p. 652) under the heading of "Medical Services in N.H.S." can only have added to their doubts by the absence of information on their present position and the possibility of succession to a practice or partnership.

The regulations appear to allow the expansion of individual practices to a possible maximum of 6,400 units in one principal's name, should that doctor employ an assistant. The capitation fees on the extra 2,400 patients far exceed the assistant's salary (one-third of that number would cover the average present rate), and with such an inflated list personal attention from the principal, which is what the patient "signed on" for, is not possible. One appears to be forced to the conclusion that such expansion is undertaken purely for financial gain and not for better service. To add to this financial advantage a "supervision fee for training an assistant" seems quite unnecessary. I fully agree that newly qualified doctors require guidance during their introduction to general practice, but to continue the system whereby a succession of assistants may be hired to boost the principal's income is commercialized medicine at its worst.

In most practices assistants build up a certain goodwill by their own merit, and should the purchase of practices be abolished it would seem reasonable to allow them to take patients in their own names from the introduction of the new scheme. The profession fears that there may be some quiet drifting into the Bevan net, and while the assistants' position remains vague and largely unrepresented it would seem that this is the quarter from which—even if reluctantly—the drift is most likely to begin.—I am, etc.,

Birmingham. JOHN GEMMELL.

Benefits for Doctors' Wives

SIR,—I note with interest the letter from Mrs. Irene Hartley (April 3, p. 661) in which she fears she will have extra work to do when the National Health Service Act comes in because records will have to be kept of all consultations and treatments. I must say I find this argument quite incomprehensible. When the N.H.S. is enforced she will be relieved of all dispensing duties and the task of sending out and collecting bills. The keeping of records will, like the panel records to-day, surely be her husband's job. I feel that she does not fully appreciate the tremendous importance of this matter of record keeping. Locums and assistants are frequently accused by principals of making mistakes, and losing patients, but is this surprising when one considers that in most practices they have no records whatsoever of the previous illnesses of private or club patients? I feel sure that a great many errors in diagnosis and treatment could be avoided by keeping proper records for all patients. Even the best of memories are not infallible.—I am, etc.,

Wolstanton, Staffs. ANNE M. TOMS.

POINTS FROM LETTERS

White Bread and Peptic Ulcer

Dr. G. W. LLOYD (Thornton Heath, Surrey) writes: Peptic ulcers are found in eaters of much white bread, such as men who take sandwiches for their midday meal. These admit they eat a lot of bread, and if one counts the number of rounds they eat in a day it is found they eat much more than the average. Eaters of wholemeal bread seem free from peptic ulcer—I have not met one. Peptic ulcers heal rapidly when on the restricted diet enforced after haemorrhage or perforation, and this restriction includes a complete absence of bread in the early days and only a small proportion of bread for some weeks. . . .

Since Sir Edward Mellanby's preliminary notice in the *B.M.J.* in the autumn of 1946 that white bread caused hysteria in dogs, full pressure has been put on all cases. They have been told they would be well if they kept to wholemeal bread and promised a return of symptoms if they ate white bread. The result has been a cessation of symptoms, relief from pain coming before complete healing is possible. Temporary failures have been caused by: (1) eating of white flour, pastries, and cakes (one case); (2) return to white bread in a few cases because of preference—these required correction but the majority found conviction; (3) adulteration of wholemeal bread by white flour by some bakers. (This adulteration is shown by blotches of white in the general brown colour of the wholemeal bread.)

Pain in Coronary Occlusion

Dr. W. H. MYERS (London, S.E.9) writes: I was called to see a case recently and witnessed the events preceding a fatal issue in coronary occlusion—an event which is usually so sudden that the practitioner finds the patient has died before help or even examination is possible.

The patient was a man aged 69. He had been in pain for about two hours and told me it was severe—as if there was a band round his chest preventing him from breathing. He said he felt the most severe pain in the upper part of the right chest and right arm. A leading question about his left arm made him assent that there was some pain there, but he continued to rub his right arm, particularly the inner side of it. While I was examining him his condition became worse and the pain more severe. The capillary refill time was so prolonged that I did not see any colour in his forehead or arm. I gave him an intravenous injection of morph. sulph. gr. 1/4 (16 mg.), atropine sulph. gr. 1/100 (0.65 mg.), and aminophylline, 10 ml., slowly. The effect was dramatic. His voice tailed off to a blurred mumble, the eyes closed, and he apparently slept, but five minutes later the pain began to break through again, and he died in half-an-hour. At post-mortem examination the cause of death was found to be atheroma of the coronary arteries, myocardial degeneration, and cardiac failure.

The unusual point of the case was the insistence of the patient that the pain was right-sided and radiated down the right arm, whereas most books suggest the radiation is left-sided.

Natural Position for Childbirth

Dr. MARY KEITH-THOMPSON (Manchester) writes: During the early part of my domiciliary midwifery practice in Northern India I came across some articles on the subject by Dr. Kathleen Vaughan. Now the squatting position is the position in which a Muslim or a Hindu lady usually answers to the calls of Nature. So I used to tell them in the vernacular to sit as though they were doing so.

My midwife assistant would put clean newspapers on two bricks, placed a foot apart, and a sterile sheet or towel on the papers. As soon as the head was visible the patient would be put back to bed and delivered, in the usual position. Sometimes the patient preferred to squat on the bed. Of course this is by no means a comfortable position for a patient at full term, and some have flatly refused to squat. . . .

General anaesthetics—necessary in forceps deliveries—were still regarded with fear and trembling in domiciliary obstetrics in India. Therefore in slight disproportions this form of delivery came to be extremely useful.

Prickly Heat

Dr. JAMES H. SEQUEIRA (N'Gong, Kenya) writes: The correspondents who have written to you on this subject do not appear to be acquainted with the work of the late Dr. E. C. Smith, of Lagos. In his *Atlas of Skin Diseases in the Tropics* (Bale, Sons and Danielson, 1932) he describes *monilia* which are found in the roofs of the vesicles which are a special feature of prickly heat. The organism has a well-developed mycelium and clusters of spores. . . . Dr. Smith grew the organism on Sabouraud's medium, and from the cultures reproduced in volunteers the phenomenon of prickly heat. . . . His research would appear to settle the question of the aetiology of the affection. Warmth and moisture and probably a suitable *p*H would provide a favourable medium for the growth of the parasite, which may develop in the alimentary tract. His work would also explain the efficacy of treatment by powerful fungicides such as the strong sublimate lotion (perchloride of mercury, 1 in 500) advocated by Dr. C. J. Wilson in the *Journal* of Jan. 10 (p. 76).

Phony Wife

Mr. D. F. A. NEILSON (London, W.1) writes: A few days ago I was listening to the commentator of a British news-reel describing a telephone gadget by means of which doctors would be able to have a phonograph record made of incoming telephone messages which were passed at a time when the telephone at their office or house might be unattended. It was described as being suitable for a doctor without a wife or a secretary. This epitomizes the opinion of the lay public or official mind as to the "duties" of a doctor's wife.

Doctors' Wives

Mrs. IRIS BROOK (London, S.E.9) writes: I would like to point out to those misguided doctors' wives who are wasting their time and money by joining the League of Doctors' Wives that if their husbands join the Health Service a rota of duties can be arranged, thereby giving each doctor and his wife regular relief from routine duties. The present competitive system is not conducive to "good medicine." The fear of another doctor taking a patient is too often the reason for single-handed practitioners being tied to their telephones or door bells. . . . As a doctor's wife of over 20 years' standing I think I know the snags and difficulties which are the lot of a doctor's wife, but we were not "directed"; we chose husband's jobs and all entirely of our own volition. The shortage of man- and woman-power is a national problem, and it would be interesting to know the labour pool from which Mrs. Hartley suggests the Minister of Health should direct the domestic and secretarial help for every doctor entering the new service. Apart from the economics of such a scheme, there might be some objections by the "directees."

*** This correspondence is now closed.—ED., *B.M.J.*

New Act

Dr. A. VICTOR RUSSELL (Wolverhampton) writes: Remember that the present Government, with its enormous majority, on the day after we entered the Service on the terms suggested by Lord Moran could introduce a small Bill designed to convert us into a whole-time salaried State service (and do not forget that this is still official Socialist policy), and in spite of any opposition that could be offered push it through all its stages in a matter of weeks or even days. Let us make it perfectly plain that we are not prepared to fall for a political trick of that sort. . . .

In conclusion, I should like to ask a question. Should the Government concede all our principles, we are at the moment committed to entering their Service; but even assuming such wholesale concession would there not still be chaos on the "vesting day"? For there would not be one extra hospital bed, one single extra nurse, or any more equipment available than there is at present? It is time that we thought about this and put forward a demand for any new service to be introduced by stages—by evolution and not by revolution. In fact, if we are wise we should stand out for a completely new Act.

Personal Freedoms

Dr. ARTHUR E. CLAYTON (Dorrington, Salop) writes: I believe at rock bottom the profession is fighting for the elemental personal freedoms of every man, woman, and child in this country, to say nothing of those who come after us, and that we form a small but important sector in that great front which is being mobilized not only in Europe but over the world in defence of those absolute values which give any meaning to life at all. If this be so, herein is the nourishment for our "morale" and a clear-cut vision of where we stand as we view ourselves in the mighty company of those being marshalled in every country where genuine democracy is being upheld. It may be said that this is rhetoric fancy and illusion. To me at least it is sober fact. We are facing dangerous possibilities, and I suggest that the public mind should be raised above our professional arguments about this and that and brought into that clearer atmosphere where the crucial issues can be clearly perceived.

Obituary

Mr. GEORGE POTTS died at his home in Maidstone on March 13 at the age of 71. He was born in Chester and educated at Edinburgh, where he qualified in 1900. He subsequently studied in London and Vienna, and took the F.R.C.S.Ed. in 1906. He went to Maidstone originally as a house-surgeon at the Ophthalmic and Aural Hospital after holding the appointment of registrar at the Central London Ear, Nose, and Throat Hospital. During the 1914–18 war he served with the R.A.M.C. and was with the Black Watch in India and the Middle East. After the war he returned to private practice in Maidstone, and was appointed honorary surgeon to the hospital there. He had consulting-rooms in London, and was also one of the ophthalmic specialists for the Ministry of Pensions. Mr. Potts was a bachelor, and was well known as a freemason and in connexion with All Saints' Church, Maidstone.

Dr. ROBERT DOUGLAS, who was medical officer of health for Moray and Nairn for over thirty years, died in the Aberdeen Royal Infirmary on March 19 at the age of 76. Robert Douglas was educated at Dallas Public School and Elgin Academy, and subsequently at Aberdeen University, where he graduated M.A. in 1893. He then went on to study medicine at Glasgow, and graduated M.B., Ch.B. in 1898. He soon became interested in public health, and particularly in school health administration, and his first public health post was as assistant medical officer of health at Reading. He took the D.P.H. at St. Andrew's in 1906 and proceeded M.D. in 1914. He became school medical officer for the Norfolk County Council and later for the West Riding County Council of Yorkshire. In 1911 he succeeded as medical officer of health for the County of Moray Dr. James A. Cameron, who continued as medical officer of health for Nairnshire. When Dr. Cameron resigned in 1918 Dr. Douglas also succeeded him at Nairn. He was, too, M.O.H. for the burghs of Grantown-on-Spey, Forres, and Burghead, and on the death of Dr. A. Robertson, of Elgin, in 1941 he also became responsible for Elgin, Lossiemouth, and Rothes. This placed him in the unusual position of being responsible on the public health side for three counties and seven burghs. Apart from his official duties, his chief interest was in local history, on which subject he was an authority. His best-known work was the *Annals of Forres*, which was published privately in 1935, but he was also the author of many booklets and articles on local matters. On the occasion of his retiral towards the end of 1941 he was presented with a cheque by a deputation from the Joint County Council. Dr. Douglas is survived by two sons.

Dr. ALISON MARY HUNTER, who died on March 26, was educated at the University of Glasgow, graduating M.B., Ch.B. in 1918. She was associated with the Glasgow Royal Infirmary for over twenty years, and was also the senior gynaecologist and obstetrician at the Redlands Hospital for Women, Glasgow. She was honorary consulting gynaecologist to the Glasgow Royal Mental Hospital, and she had been the late Prof. James Hendry's assistant for a number of years before being elected F.R.C.O.G. in 1939. She succeeded Prof. Hendry as gynaecological surgeon to the Royal Infirmary in October, 1946. She was a former chairman of the Glasgow branch of the National Vigilance Society, and at the time of her death was treasurer of the Medical Women's Federation.

Dr. ROBERT MICHAEL FORDE, who died at his home in Worthing on March 27 at the age of 87, after a long illness, had spent many years in the West African medical service. Dr. Forde was a student of Queen's College, Cork, and qualified in 1885. He served in West Africa for over twenty-five years, his last post being that of P.M.O., West African Medical Staff, at Sierra Leone. He retired in 1914 and served in the R.A.M.C. with the rank of major. He was responsible for some of the early work in Gambia on trypanosomes. Dr. Forde had been an invalid for the last four years and he leaves a widow and one son.

Dr. KEITH ANTONY REGINALD HENRY died at the age of 25 on April 1. Dr. Henry was born at Birkenhead and received his early education at Lytham and at Arnold School, Blackpool. He graduated M.B., Ch.B. at Edinburgh University in December, 1945, and was engaged for some time as a locumtenent in the Manchester and Blackpool areas of Lancashire. He had recently taken up an assistantship at Bispham.

Medical Notes in Parliament

CRIMINAL JUSTICE BILL

On April 14, when the Criminal Justice Bill was considered on Report, Mr. SYDNEY SILVERMAN moved a new clause suspending for five years the sentence of death for murder and substituting imprisonment for life. Mr. HOLLIS seconded the Motion.

Mr. Hollis remarked that Mr. Bernard Shaw argued that certain murderers could be reformed, but said that doctors could certify that other people were beyond reformation and should be killed "as one would kill a mad dog." Mr. Hollis commented that Mr. Shaw had never previously expressed the smallest regard for any opinion expressed by a doctor and would not admit that a doctor was capable of telling him whether he should be vaccinated. Mr. Hollis reminded Members that the greatest of living psychologists, Dr. Jung, was of opinion that on the whole capital punishment was a slight encouragement to murder rather than a deterrent. People with perverted tendencies got an extra thrill out of feeling that in their war with society they contended for the highest of all stakes. Under the present system the criminal was offered all the thrills of risking his life and comparatively little of the danger of losing it.

Sir JOHN ANDERSON thought in what was called "constructive murder," where a person on some felonious enterprise unwittingly caused death, the death penalty had no deterrent effect, and he doubted whether it had any in what the French called *crime passionnel*. Broadly, however, the death penalty did reinforce the protection of society and diminished the risk to which officers of the law were exposed. He called attention to the evidence of Sir Alexander Paterson to the effect that if the capital sentence were abolished the change should not make any difference to the present regime. Sir Alexander thought that ten years was a sufficient period of detention, and he thought that after that time physical and mental deterioration set in. Parliament could not get out of the difficulty by saying that prisoners who were morose and subject to gusts of passion ought to be certified insane. Lord Atkin had tried to get what were called the M'Naghten Rules extended to cover cases of murders committed by persons suffering by reason of some defect of mind from what was called ungovernable impulse, but his recommendations had not been accepted.

Mr. HALE said the unanimous testimony of governors of prisons, including the governor of Pentonville, was that the effect on the prison population of an execution was disastrous. The men suffered neurosis and moral horror intensified by their imprisonment. If the condemned man slept on the night before his execution he was usually the only person in the prison who did so.

Mr. WILSON HARRIS remarked that in 1937, 87 people died by murder and in the same year 6,633 were killed on the roads of this country. In 1947 in England and Wales there were 27 executions; in 1946 there were 30.

Mr. CHUTER EDE did not believe that public opinion in this country was in favour of the clause at this time. The rules for the granting of reprieves had been fairly applied by successive Home Secretaries. There had been no answer during the debate to the argument that, if the death penalty were abolished and a prison sentence substituted which public opinion would tolerate, it would become impossible to conduct the present service on the lines that Sir Alexander Paterson desired.

The new clause was carried by 245 to 222 and was added to the Bill.

Payment of Medical Witnesses

The Criminal Justice Bill was again considered on April 15.

On Clause 24, on remand for inquiry into the physical or mental condition, Mr. YOUNGER moved amendments relating to the payment of allowances to medical practitioners who attended a court to give evidence. These amendments were designed to ensure that allowances should be payable only when the witnesses actually attended and did not merely give evidence by means of a report. The amendments were accepted. Subsequently Mr. EDE moved a further amendment to Clause 22 to make similar provision regarding the payment of witnesses' allowances to medical practitioners who gave evidence under Clause 22 in a case where an offence was not indictable and was made under Clause 24. Mr. Ede said Clause 22 as it stood did not provide for payment of allowances to medical practitioners in such a case and it was highly desirable that there should be power to make such payment.

On Clause 4, which concerns probation orders requiring treatment for a mental condition, the Speaker declined to call an amendment by Mr. JAMES HUDSON instructing the court to consider whether a condition of abstinence from drugs or intoxicating liquor should be attached to the probation order.

Mr. EDE moved amendments to make certain that the medical practitioner who is consulted about the mental state of an offender shall be one who is competent to guide the court. He proposed, after the word "practitioner," to insert "appeared to the court to be experienced in the diagnosis of mental disorders." It would be the duty of the courts to make themselves reasonably acquainted with the qualifications of the medical practitioners concerned.

Mr. JANNER said that Members who had fears about the type of medical men who would be consulted felt bound to say Mr. Ede had gone as far as he could to satisfy those fears. He hoped that Mr. Ede would later allow another medical practitioner also to be consulted. The amendment was carried, as was also one proposed by Mr. YOUNGER that a report on the mental condition of a prisoner could be received in evidence without proof of the signature, qualifications, or experience of the practitioner signing it.

Mr. EDE moved to modify Clause 33 to exempt children under 14 years from this provision, and to make clear that before a court could order finger-prints to be taken a person over 14 years of age must have been taken into custody, must have been charged with an offence, and the court must consider that his was a case in which this power should be given to the police. These amendments were agreed to.

Radioactive Substances Bill

A Radioactive Substances Bill has been introduced by the Government in the House of Lords. The object of this Bill is to enable various Ministers of the Crown to make regulations controlling the manufacture, storage, supply, and use of radioactive substances, which are defined as substances "which consist of or contain any radioactive chemical element, whether natural or artificial." Only doctors and dentists, or persons acting under their direction, are to be permitted to use "irradiating apparatus" for therapeutic purposes. The health of those who have to work with radioactive substances is to be safeguarded by appropriate regulations, and steps are to be taken to ensure the safe disposal of radioactive waste products. The Ministers concerned must consult an Advisory Committee, which will be set up for the purpose, about the exercise of any of their functions under this Bill.

Health Centres

Mr. PLATTS-MILLS reported on April 15 that widespread anxiety had been aroused by a recent circular to local authorities discouraging any development of health centres at the present time; he asked Mr. Bevan to issue further instructions making it clear that it was not his intention to discourage any initiative in the planning and setting up of new health centres.

Mr. BEVAN said there was evidently a misunderstanding. He had never wished to discourage health centres, which would be a key feature of the new Health Service. But he had to point out the building stringencies of the moment and say that he did not, therefore, expect any widespread programmes yet.

Grants for Postgraduate Training

On April 15 Group Captain WILCOCK asserted that a number of trained medical specialists in receipt of Government grants would terminate their appointments at hospitals before the appointed day. He asked what Mr. Bevan proposed to ensure the continuation of these grants until appointments were made under the new Act.

Mr. BEVAN, in his answer, assumed that the question referred to appointments under the scheme for postgraduate education for doctors released from the Forces, now held by practitioners who before joining the Forces were training to become specialists and desired to continue their training. This scheme would continue under the National Health Service. Some of the practitioners concerned were, on account of their individual circumstances, receiving grants under the Government's Further Education and Training Scheme. These also would continue.

Transfer of Medical Officers of Health

Mr. LIPSON on April 15 asked Mr. Bevan to postpone the transfer to county councils of medical officers of health and their staffs and offices from the new "most purposes" county boroughs recommended by the Boundary Commission until a decision had been made with regard to implementing this part of their report.

Mr. BEVAN replied that any transfers of staff and premises essential to transferred functions under present legislation must be made if county councils were to carry out the duties Parliament had given them from the appointed day.

Hong Kong University.—In a statement on April 9 about the re-establishment of Hong Kong University, Mr. CREECH JONES said immediate steps would be taken for the selection of men for the professorships in medicine, surgery, and pathology. An increased number of medical students would be admitted and provision would be made for postgraduate studies in medicine.

N.I.F. and N.H.S.—Mr. BEVAN told Major Lloyd on April 12 that although there was a relatively small contribution from the National Insurance Fund towards the total cost of the health services, those services were independent of the insurance scheme. The contribution was in no way based on the cost of the health services and no question of reducing that contribution could arise on the ground that expenditure on any particular part of those services was delayed.

Atomic Energy.—Mr. STRAUSS, answering questions on April 12, said it was considered that it would be at least ten years—and some held considerably longer—before atomic energy could be used on a considerable scale for industrial premises. A low-energy experimental pile had been in operation at Harwell since August, 1947, and a larger pile would come into operation there this summer. The production of fissile material at Sellafield was a further essential preliminary. Work was going forward in planning alternative designs of experimental piles for power production. He denied that the village of Imber was to be exposed to atomic bombing.

Medico-Legal

ASSAULT ON A DOCTOR

A patient who hit a doctor because he was dissatisfied with his treatment was fined by the Croydon magistrates recently.[1]

Mr. Wright, a panel patient of Dr. J. Stanley Lane, was seen at his surgery and was found to be suffering from a mild dermatitis of the face. Dr. Lane prescribed a zinc cream. After getting the ointment dispensed the patient returned saying that he could not be expected to use such stuff and go about looking as if he had whitewash all over his face. Dr. Lane took a small amount of the cream and demonstrated on the back of his own hand that if it was lightly rubbed in it did not show.

The next day the patient returned and again asked for treatment. He said that he had applied fuller's earth to his face. When asked by Dr. Lane why he had not used the cream which had been prescribed he said that he could not use "that stuff." Dr. Lane then suggested that if he was not prepared to accept the treatment prescribed for him it would be better for him to change his doctor. He asked for the man's panel card so that he could sign it and facilitate the transfer. At this the patient apparently became angry and he proceeded to assault the doctor. The police were called, and as the patient refused to apologize the matter was reported by Dr. Lane to the Medical Protection Society, which prosecuted on his behalf.

In imposing a fine of £5 with 2 guineas costs, payable within twenty-eight days, the chairman of the Bench gave prominence to counsel's remarks concerning assaults upon doctors generally. There had been, he said, "several reports of patients, dissatisfied with doctors, taking it upon themselves to take the law into their own hands."

Croydon Advertiser, March 26.

Universities and Colleges

UNIVERSITY OF LONDON

A course of three public lectures on "Speech" will be given by Mr. D. B. Fry, Ph.D., in the Department of Physiology of University College, Gower Street, W.C., on Tuesdays, April 27, May 4 and 11, at 5 p.m. Details will be published in the diary column of the *Journal*. Admission is free, without ticket.

Miss Mary Barber, M.D., has been appointed to the University Readership in Bacteriology tenable at St. Thomas's Hospital Medical School, from Oct. 1.

Charles Granville Rob, M.Chir., F.R.C.S., has been appointed to the University Readership in Surgery tenable at St. Thomas's Hospital Medical School, from April 1.

The degree of D.Sc. has been conferred on F. Bergel, an internal student at the Lister Institute of Preventive Medicine.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council of the College, held on April 15, with Sir Alfred Webb-Johnson, Bt., President, in the chair, Mr. S. A. S. Malkin, Mr. C. Gill-Carey, and Prof. T. P. McMurray were admitted *ad eundem* Fellows of the College, and Dr. Ralston Paterson and Prof. Brian Windeyer were elected *ad eundem* to the Fellowship of the College.

Dr. C. A. Griffith, Dr. A. D. Marston, Dr. E. B. Alabaster, Mr. Ivor Lewis, Mr. H. V. Forster, and Mr. O. M. Duthie were elected Fellows of the College, being Members of over twenty years' standing.

The Jacksonian Prize for 1947 was awarded to Mr. Norman C. Tanner and a Certificate of Honourable Mention to Mr. Rodney Smith. The subject set for the prize for 1949 is "Malignant Disease of the Urinary Bladder."

Mr. Geoffrey Keynes was appointed Thomas Vicary Lecturer, and Sir Reginald Watson-Jones was appointed Robert Jones Lecturer, for 1948. Dr. A. F. Jackson and Dr. M. W. Carr were appointed Charles Tomes Lecturers.

The Begley Prize was awarded to Reginald Parker Davies (University of Leeds).

The following hospitals were recognized in connexion with the regulations for the Final Fellowship examination: General Hospital, Birkenhead (additional recognition of two surgical registrars and orthopaedic registrar); City Hospital, Nottingham (resident surgical officer and senior house-surgeon).

A Diploma of Fellowship was granted to James Cyril Angell (Middlesex Hospital).

Diplomas in Tropical Medicine and Hygiene, in Ophthalmic Medicine and Surgery, and in Child Health were granted, jointly with the Royal College of Physicians of London, to the following successful candidates:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—P. A. Allsopp, J. E. G. Baker, C. Castillo, A. Das Gupta, W. Davidson, N. Deroumian, R. Dickie, A. J. Duggan, J. T. Erb, A. D. J. Farquharson, P. Feeny, S. L. Gauntlett, S. Ghosh, M. Ghousuddin, S. Ghousuddin, J. G. Guest, G. T. M. Hayes, Gladys I. Jeffree, D. E. Jeremiah, R. M. Jhala, W. H. Jopling, A. M. Khair, T. P. Loke, F. P. Morris, B. Nicholson, P. E. Parker, F. R. Roberts, R. W. N. L. Ross, S. Sas, K. R. Shroff, H. Spencer, Mildred A. R. Stilson, M. Srokowski, N. B. Thadani, Ing Thay The, B. M. Urs, J. M. Wilson.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—I. Aubrey, J. T. Baird, G. B. Barlow, N. Basu, Margaret A. Billinghurst, B. N. Consul, J. S. Conway, D. C. Coull, C. E. A. Cragg, G. D. Cumming, C. D'Silva, E. W. Dorrell, A. T. G. Evans, J. Fischer, J. B. Foster, J. Frankenthal, J. I. R. Gray, L. J. Green, G. S. Griffith, J. S. Groves, Elizabeth Hainsworth, M. Hashimi, Lilian Hodgson, M. E. Hollis, G. James, T. E. Jones, A. H. Katz, M. I. H. Kaufmann, J. N. Kerr, W. A. D. Lawson, G. H. Levien, R. F. Lowe, A. V. Madangopal, E. T. Meyer, E. Miller, J. D. Milne, M. C. Mishra, N. D. Misurya, R. M. Moxham, S. I. Munib, D. R. Nanjappa, R. K. Pilcher, S. A. Railton, W. B. Ridsdel, H. Riley, L. A. Rook, A. M. Roy, I. Sacks, S. Sacks, L. Schrire, C. W. A. Searle, D. V. Sethi, J. V. Sheldon, J. W. Shield, M. S. Shroff, Cecilia M. Simmons, R. Sinha, A. T. O. Speirs, B. P. Srivastava, J. B. T. Thomas, S. W. Thomson, J. N. Tolia, J. L. Van Selm, H. E. Walker, F. B. Zwink.

DIPLOMA IN CHILD HEALTH.—J. R. G. Agius, Margaret C. Barron, R. G. G. Barry, Joan R. K. Bastable, S. Basu, J. S. Battersby, J. B. Berry, G. L. Brinkman, H. J. Brooks, Joyce B. Burke, R. U. Carr, H. Chandra, Kathleen M. Chipperfield, Betty L. Coles, W. M. Connell, Olive Cooke, Christine E. Cooper, R. D. G. Creery, Dorothy S. Critchley, N. A. A. Cust, M. J. Cutler, J. G. A. Davel, E. G. Donovan, D. M. Douglas, Honor Doyle, Jean Edmonds, Gisela Bisner-Kissmann, Dorothy I. Elkin, P. J. M. England, Kathleen E. Faulkner, C. M. B. Field, Mary I. Fleming, Margaret Fouché, C. B. Franklin, J. Z. Garson, L. E. Gellman, I. Gordon, C. N. Grainger, C. L. Grandage, A. L. Griffiths, E. P. Griffiths, F. L. Groarke, W. S. Hacon, Marjorie K. Hall, L. P. Harington, Gwendoline Hewitt, J. G. Hoult, Irene E. Howorth, Myrtle M. Hutchins, W. P. U. Jackson, N. T. Jaco, J. James, J. G. Jamieson, V. H. Jones, J. P. Kelly, Katharin I. Kerr, A. C. Kirby, Daisy F. Lee, E. Lister, D. C. Little, R. M. Littledale, Joan B. T. Logan, L. P. L. Loorham, Sarah Lorimer, Catherine H. Mackie, T. P. Mann, A. R. C. Margetts, J. K. Martin, S. Mason, Kathleen Mathers, B. M. O. Megat Khas, F. S. Mellows, J. C. G. Mercer, Edith M. Metcalfe, J. G. Millichap, Madeleine B. Morris, Sheila B. Moss-Morris, G. Mundel, Margaret H. Mutch, Nora Naish, P. M. Newton, J. A. O'Connor, W. E. Parkes, P. R. P. Pearsall, N. K. Pein, Joan M. Pooley, Lois E. N. Price, E. Pringle, Mary Pringle, L. J. Prosser, J. F. P. Quinton, J. Rabkin, P. M. Ransford, Enid A. Reed, Dilys M. Rees, Iorwerth Rees-Mathews, R. Resnekov, Rosemary J. Reynolds, Nest G. Richards, D. S. Rosenberg, C. Royle, R. H. Scott, H. P. Scurlock, C. G. R. Sell, A. D. Shirley, H. Shrand, Esther E. Simpson, G. Solomons, F. Stern, Elizabeth M. Stokes, P. R. Swyer, B. E. R. Symonds, W. F. Townsend-Coles, N. S. D. Venkatswamy, Elizabeth C. Whyte, C. G. Williams, Joan Williams, W. H. D. Wince, Josephine H. Wood, Grace E. Woods, Jean L. Wybar.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The William Meredith Fletcher Shaw Memorial Lecture for 1948 will be delivered by J. M. Munro Kerr, M.D., F.R.F.P.S., Hon. F.R.C.O.G., Emeritus Regius Professor of Midwifery in the University of Glasgow, in the College House (58, Queen Anne Street, London, W.), on Friday, May 21, at 5 p.m. His subject is "Contracted Pelvis." All medical practitioners interested in the subject are invited to attend the lecture, but admission is by ticket only, obtainable from the secretary of the College.

Dr. Atso Soivio, Finnish Red Cross Hospital plastic surgeon, is in Britain until the middle of May under the auspices of the British Council. He specializes in the treatment of cleft palate and hare-lip, including speech therapy, and is here to meet British plastic surgeons and study operations.

No. 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 3.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. *Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.
A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1948 (a)	(b)	(c)	(d)	(e)	1947 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	51	6	35	1	2	86	10	25	8	1
Deaths		1	1				2	—		
Diphtheria	161	23	46	12	1	184	18	42	10	10
Deaths	3	—	1	—	—	5	—	—	—	1
Dysentery	188	14	38	1	—	44	6	21	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	1	—	—	1	—	—	—	—
Deaths		—					—			
Erysipelas			37	9	3			37	10	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				31					17	
Deaths	40	4	6	—	—	89	20	22	10	—
Measles*	10,874	1719	295	90	53	8,343	440	254	25	46
Deaths†			3	—	—	20	—	3	—	—
Ophthalmia neonatorum	72	4	22	—	—	68	4	17	—	1
Deaths										
Paratyphoid fever	1	—	1 (B)	—	—	6	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	764	44	3	13	7	730	55	77	4	5
Deaths (from influenza)‡	15	2	1	—	—	27	6	4	2	1
Pneumonia, primary			263	27				129	27	
Deaths	214	35		7	13		54			10
Polio-encephalitis, acute	4	—				1	1			
Deaths							—			
Poliomyelitis, acute	15	—	2	1	—	4	—	1	1	—
Deaths§	4	1					—			
Puerperal fever		1	18		—		1	14		2
Deaths										
Puerperal pyrexia‖	123	7	12	—	—	115	6	10	—	1
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,421	108	305	46	43	995	86	155	24	33
Deaths†			1	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	2	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	5	—	—	1	1	8	—	—	2	—
Deaths	—	—	—	—	—	1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,639	166	22	52	13	1,775	192	198	71	15
Deaths	11	1	1	1	—	13	2	5	9	2
Deaths (0–1 year)	344	48	33	21	20	519	78	80	62	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,777	730	620	183	103	5,301	870	690		151
Annual death rate (per 1,000 persons living)			12·5	11·4				14·3	17·9	
Live births	8,659	1351	1191	377	289	8,536	1277	1085		294
Annual rate per 1,000 persons living			24·0	23·6				21·9	23·4	
Stillbirths	232	26	34			285	27	33		
Rate per 1,000 total births (including stillborn)			28					30		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.
† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.
‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.
§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.
‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* an increase was recorded in the incidence of measles 1,566, acute pneumonia 44, whooping-cough 36, and dysentery 52. There was a decrease in the notifications of scarlet fever 105.

The increased incidence of measles was concentrated in London and the surrounding counties; the largest rises were London 294, Middlesex 194, Essex 142, Kent 129, Durham 116, Lancashire 105, and Surrey 91. Changes in the local trends of whooping-cough occurred in only a few counties; the largest were increases in Sussex 52 and Kent 35 and a decrease in Yorkshire West Riding 62.

The chief feature of the returns for diphtheria was a rise of 10 in London. The only fluctuation of any size in the local incidence of scarlet fever was a decrease of 33 in Yorkshire West Riding. Only small variations occurred in the returns of acute pneumonia.

A fresh outbreak of dysentery involving 28 persons was notified in Cardiff C.B. Increases were recorded in the notifications of dysentery in Lancashire from 59 to 80 (Liverpool C.B. 24, Oldham C.B. 27) and in Yorkshire West Riding from 18 to 35 (Todmorden M.B. 15). The only other large return was London 14.

The fall in the notifications of acute poliomyelitis continued. The only administrative areas with more than one case were Lancashire, Liverpool C.B. 2, and Somerset, Bridgwater M.B. 2.

In *Scotland* there were rises in the incidence of scarlet fever 44, acute primary pneumonia 37, and cerebrospinal fever 27; decreases were recorded for measles 74, whooping-cough 28, and dysentery 15. The increases in the notifications of cerebrospinal fever and scarlet fever were mainly due to the experience of the city of Glasgow. Although the notifications of diphtheria remained unchanged for the whole country an increase of 13 was recorded in Glasgow.

In *Eire* increases were recorded in the returns for scarlet fever 10, whooping-cough 7, and diarrhoea and enteritis 6. There was a decrease of 9 in the notifications of measles.

In *Northern Ireland* only small changes were reported in the trends of infectious diseases.

Information for Travellers

Greece.—The following ports have been reopened to arrivals from Egypt: Piraeus, Salonika, Patras, Volo, Cavalla, Alexandropolis, Canea, Heraklion, Rhodes, Samos, Mitylene, Kalamae, and Corfu. Vaccination and surveillance are the sole measures remaining in force.

Hong Kong.—All passengers are required to produce certificates showing that they have been vaccinated against smallpox not more than three years before departure from an infected port. The certificate should show that the result of the vaccination has been observed and recorded in one of the following terms, viz.: (*a*) immediate reaction, reaction of immunity, or immune; (*b*) accelerated reaction or vaccinoid; or (*c*) typical primary vaccinia or vaccinia. A certificate of "unobserved" or "no reaction" will not be accepted. The certificate should also bear a photograph of the holder embossed or stamped with an official seal, and be signed by a medical or health officer occupying an official position in the services of a Government or Municipal Health Department.

Shanghai.—All passengers and crew disembarking at Shanghai are subject to medical inspection and are required to produce valid certificates of vaccination against smallpox not more than twelve months old, failing which they will be vaccinated and, if necessary, detained for surveillance.

Singapore and Federation of Malaya.—Requirements are: (*a*) Medical inspection. (*b*) Vaccination certificate (International Model) not more than three years old and containing in the certificate a note of the type of reaction observed and including the dates of vaccination and observation of results. The certificate is to be signed by a medical or health officer occupying an official position in the Government or Municipal Health Department. (*c*) Vaccination, if not in possession of certificate, and surveillance up to a period of fourteen days after the arrival of the ship. (The above applies to cabin passengers who are not contacts. In the case of deck passengers observation is required at the Quarantine Station.)

Infectious Diseases During the First Quarter

The trends of the infectious diseases during the first quarter of this year show some interesting contrasts with preceding years. The most notable of these comparisons is, perhaps, the entire absence of an influenza epidemic. The deaths from influenza in the large towns were about one-sixteenth of the number recorded in the first quarter of 1940, the last year with a high

incidence. The downward trend of diphtheria continued, and the notifications were the lowest recorded in a first quarter. The notifications of acute pneumonia were very low. The incidence of cerebrospinal fever declined after remaining practically constant for five years at about three times the pre-war level. Whooping-cough was unusually prevalent during this quarter. Measles was at an exceptionally high level for an inter-epidemic year. Scarlet fever was also very prevalent. The number of notifications for the first quarters of the last five years were:

England and Wales	1944	1945	1946	1947	1948
Scarlet fever	26,962	19,163	16,952	15,527	23,348
Whooping-cough	26,141	19,780	20,033	27,922	35,034
Diphtheria	9,005	6,061	6,220	2,832	2,466
Measles	20,278	247,435	17,652	165,895	88,489
Acute pneumonia	14,977	14,782	16,278	15,500	10,969
Cerebrospinal fever	978	968	906	1,110	629
Dysentery	2,834	4,681	4,444	931	2,100
Enteric (typhoid and paratyphoid)	111	140	138	98	103
Great towns: Deaths from influenza	1,131	692	2,156	1,341	273

Week Ending April 10

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,196, whooping-cough 3,303, diphtheria 155, measles 11,193, acute pneumonia 703, cerebrospinal fever 36, acute poliomyelitis 14, dysentery 111, paratyphoid 3, and typhoid 7.

Medical News

Awards for Cancer Research

Prof. Alexander Haddow and Prof. Eric Boyland have each been awarded the Katherine Berkan Judd Award by the Memorial Hospital, New York. They are both in New York receiving the award, which is for outstanding contributions to elucidating the causes and cure of cancer. Prof. Haddow is the Director of the Chester Beatty Research Institute at the Royal Cancer Hospital and Professor of Experimental Pathology in the University of London. He has worked on chemical carcinogens and growth inhibitors. Prof. Boyland is Professor of Biochemistry in the University of London.

Director-General of F.A.O.

Mr. Norris E. Dodd, United States Under-Secretary of Agriculture, has been elected Director-General of the Food and Agriculture Organization in succession to Sir John Boyd Orr.

Central Midwives Board

At its April meeting the Central Midwives Board re-elected Mr. Arnold Walker, F.R.C.S., F.R.C.O.G., as chairman and Mr. J. P. Hedley, F.R.C.P., F.R.C.S., F.R.C.O.G., as vice-chairman for the ensuing year.

New Pathology Service

A pathology service has been established for Portsmouth and the Isle of Wight, the senior pathologist and adviser being Dr. E. M. Darmady. Dr. Radcliffe has been appointed pathologist and Dr. Dobson assistant pathologist. It is hoped to appoint another assistant pathologist and biochemist. The scheme is being financed by the Royal Portsmouth Hospital and includes all the hospitals of Portsmouth as well as the Royal Isle of Wight County Hospital, Ryde. The Ministry of Health has given permission to convert a building in the Portsmouth Isolation Hospital to house a bacteriologist under the Public Health Service, and it is hoped that he will also undertake the hospital bacteriology.

The Rockefeller Foundation

The Rockefeller Foundation is giving a donation of £9,000 for research at the Neuropsychiatric Research Centre at Whitchurch Hospital, Cardiff. The grant is designated "for research in normal and pathological biochemistry of brain tissue under the direction of Dr. Derek Richter." The object of the research now being carried out in the Research Centre at Cardiff is to discover more about the working of the central nervous system in health and disease, so that this knowledge can be applied to the treatment of mental disorders. The lines of research now in progress include biochemical work on the enzymes in the brain and work with radioactive tracers. Clinical research is also being carried out on problems related to schizophrenia, epilepsy, and senility.

Wills

Sir Bernard Henry Spilsbury, the former Home Office pathologist, left £9,232; Dr. Herbert Stanley-Jones, of Southampton, £548; Dr. Charles Voughton Knight, of Painswick, Glos., £64,090; Dr. Henry Scott Orr, of London, S.W.4, £25,485; and Dr. Robert Scott, of Exeter, £24,591.

COMING EVENTS

University of Durham, Department of Surgery

Sir Heneage Ogilvie will give the third Rutherford Morison Lecture in the Royal Victoria Infirmary, Newcastle-upon-Tyne, on Wednesday, May 5, at 5 p.m. His subject is "A Surgeon's Life."

Lecture on Laryngectomy

Dr. Jean Leroux-Robert, of Paris, will deliver a lecture on "A Modification of Laryngectomy" at the Institute of Laryngology and Otology, 330–332, Gray's Inn Road, London, W.C., on Thursday, May 6, at 3 p.m. His address will be illustrated by a cinematograph film.

N.A.P.T. Medico-Social Section

The Inaugural Meeting of the N.A.P.T. Medico-Social Section will be held on May 7 at 5 p.m. at B.M.A. House, Tavistock Square, London, W.C.1. Sir Robert Arthur Young, Vice-Chairman of Council of the N.A.P.T., will preside, and Dr. Norman Lloyd Rusby, Assistant Physician, London Hospital, and London Chest Hospital, will address the meeting on "Social Aspects of Tuberculosis." The Section is open to members of the N.A.P.T. who are professionally engaged on social work for the tuberculous, and whose names are approved for Section membership by the committee of the Section, but an invitation to the Inaugural Meeting is extended to all who are interested in this work.

Biological Standards

A meeting of the Biological Methods Group of the Society of Public Analysts and Other Analytical Chemists will be held at the Chemical Society's Rooms, Burlington House, Piccadilly, London, W., on Tuesday, May 11, at 6.30 p.m., when Dr. A. A. Miles, Head of the Standards Department of the National Institute for Medical Research, will read a paper on "Biological Standards." Visitors are welcomed at the meetings of the group and may take part in the discussion following papers.

Gastro-enterology in U.S.A.

The National Gastroenterological Association will hold its 13th Scientific Session at the Hotel Pennsylvania in New York City on June 7–10. Further details may be obtained from the Secretary of the Association, 1819, Broadway, New York, 23.

Conference in Brussels

A conference, including clinical demonstrations, will be held at Brussels on June 12–16. The National League against Tuberculosis will meet as well as the Association of Dentists of Belgium and the Belgian Society of Physical Education and Sport. Information may be obtained from Dr. L. Mayer, Faculté de Médecine, Rue de la Gendarmerie, Brussels.

SOCIETIES AND LECTURES

Monday

EDINBURGH UNIVERSITY: PHYSIOLOGY CLASSROOM.—April 26, 5 p.m. "*Medicine and the Classics*," by Dr. Douglas Guthrie.

ROYAL SOCIETY OF ARTS, John Adam Street, Adelphi, London, W.C.—April 26, 4.30 p.m. Third Cantor Lecture on Recent Advances in Anaesthesia. "*Endotracheal Anaesthesia—Local, Regional, and Spinal Anaesthesia—Intravenous Anaesthesia—Rectal Basal Narcosis—Curare—Combination or Balanced Anaesthesia—The Old and the New*," by Dr. Frankis T. Evans.

Tuesday

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C.—April 27, 4.30 p.m. "*The Surgical Treatment of Deafness*," by Mr. Terence Cawthorne.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF PHYSIOLOGY.—At Physiology Theatre, Gower Street, London, W.C., April 27, 5 p.m. "*Speech as the Communication of Ideas: The Sequence of Events in Speech: The Psychological Aspect of Speech*," by Mr. D. B. Fry, Ph.D.

Wednesday

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Burlington House, Piccadilly, London, W., April 28, 6.30 p.m. 17th Annual general meeting. "*On the Chemistry of Coffee*," by Dr. E. B. Hughes.

Thursday

EDINBURGH ROYAL INFIRMARY.—April 29, 4.30 p.m. Honyman Gillespie Lecture: "*Arterial Embolism*," by Prof. J. R. Learmonth.

Friday

KENT AND CANTERBURY HOSPITAL, Canterbury.—April 30, 8 p.m. Monthly clinical meeting.

SURREY COUNTY MEDICAL SOCIETY.—At Redhill County Hospital, April 30, 6.30 p.m. Clinical meeting.

APPOINTMENTS

Dr. Jules Maurice Curé has been appointed a Member of the Executive Council of the Colony of Mauritius.

H. H. Cavendish Fuller, M.B., has been appointed Chief Medical Consultant to the Railway Executive.

Dr. Cavendish Fuller qualified at Edinburgh in 1912 and obtained the M.D. in 1931. He is at present chief medical officer to the Western Region at Paddington Station and will continue his duties for that region while acting as consultant to the Railway Executive.

David Harley, M.D., Allergist to Moorfields Westminster and Central Eye Hospital.

Dr. Harley works in the Inoculation Department at St. Mary's Hospital. He qualified at Edinburgh University in 1929, proceeding M.D. (with Gold Medal) in 1941. He is also a Fellow of the Royal Institute of Chemists. He has published papers on allergic disorders and medico-legal blood-group determination.

Mr. W. G. Senior, O.B.E., L.D.S., has been appointed to succeed Mr. H. A. Mahony, L.D.S., as Principal Dental Officer of the Ministry of Health.

Mr. Senior was appointed to the Ministry in 1947 as senior dental officer and had previously been dental secretary of the British Dental Association since 1931.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Edwards.—On April 8, 1948, at Abingdon Hospital, to Judy (née Wilkin), wife of Flight Lieutenant Jack Edwards, R.A.F.V.R., a daughter—Susan Mary.

Fenn.—On April 8, 1948, at Builth Wells Cottage Hospital, Breconshire, to Betty, wife of Dr. C. M. Fenn, "Cerdyn," Llanwrtyd Wells, a daughter—Lynda Elizabeth.

Jarvis.—On April 12, 1948, at Queen Charlotte's Hospital, Hammersmith, to Anne, wife of Dr. H. Jarvis, 236, Park Street, Luton, Beds, a daughter—Ruth Sandra.

Valentine.—On March 26 1948, at 31 (British) General Hospital, Austria, to Constance, wife of Major G. F. Valentine, R.A.M.C., a daughter.—Diana St. Clair Fotheringham.

MARRIAGES

Blair—Gilbert.—On April 10, 1948, at Ness Bank Church, Inverness, Dr. Robert Alexander Blair, son of Mrs. A. L. S. Blair, 3, Elliot Place, Edinburgh, and of the late Mr. R. A. Blair, F.M.S., to Dr. May Lois Gilbert, younger daughter of Mr. and Mrs. Robert Gilbert, Belle Vue, Inverness.

Denton—Moore.—On April 5, 1948, at St. Peter's, Vere Street, London, W., Mervyn Denton, M.R.C.S., L.R.C.P., D.A., to Willow Gwennap Moore.

DEATHS

Creagh.—Recently, at Folkestone, Percy Nagle Creagh, L.R.C.P.&S.I.&L.M., late Deputy Commissioner of Medical Services, Ministry of Pensions.

Crompton.—On April 6, 1948, at Mayfield, Hyde Road, Gorton, Manchester, Ralph Johnson Crompton, F.R.C.S.Ed.

Davies.—On April 2, 1948, at Bedford Lodge, Whyteleafe, Surrey, Herbert Rees Davies, M.D.

Edwardes.—On April 16, 1948, George Vernon Edwardes, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., of West Clandon, near Guildford, Surrey, aged 82.

Fisher.—On April 11, 1948, the result of an accident, Nina, the wife of R. H. W. Fisher, M.R.C.S., D.P.H., 28, Cecil Street, Lytham, Lancs, daughter of the late Dr. Washington Epps.

Frankel.—On April 10, 1948, at Colindale Hospital, London, N.W., Peter Frankel, M.D., aged 33.

Goldie.—On April 6, 1948, Eric Avery Gordon Goldie, M.B., B.Chir., A.F.C., of 190, Sheen Road, Richmond.

Hancock.—On April 11, 1948, at Stoke-on-Trent, Arthur Hancock, M.B., Ch.B.

Henry.—On April 1, 1948, Keith Anthony Reginald Henry, M.B., Ch.B.Ed., aged 25.

Houghton.—On April 6, 1948, at Lyndene, Berkhamsted, Herts, Leonard Frank Houghton, M.R.C.S., L.R.C.P.

Jones.—On April 8, 1948, at General Hospital, Aberystwyth, David William Fenwick Jones, M.B., B.S.

Kendall.—Recently, Ernest Robert Kendall, M.S., of 7, Chester Crescent, Newcastle, aged 79.

Langstaff.—On April 12, 1948, James William Langstaff, D.S.O., L.R.C.P.&S.I. and L.M., Colonel, late R.A.M.C.

Latham.—On April 4, 1948, at Brig-y-don, Llanaber, Barmouth, Arthur William Latham, M.D., late of St. Helens, aged 74.

Lawrie.—On April 1, 1948, at Edinburgh, Thomas Harcourt Lawrie, L.R.C.P. &S.Ed., late of Polmont.

MacDougall.—On April 4, 1948, at 28, Manchester Road, Southport, Donald Kerr MacDougall, M.B., Ch.B.

McIntosh.—On April 5, 1948, at 38, Carlton Place, Aberdeen, James McIntosh, M.D., LL.D., Professor of Pathology in University of London at Middlesex Hospital, London, W.

May.—On April 2, 1948, at Godders, Botley, Hants, Henry James May, M.B., B.Ch., aged 80.

Mornement.—On April 16, 1948, at Royal Naval Hospital, Chatham, Robert Harry Mornement, O.B.E., M.R.C.S., L.R.C.P., Surgeon Rear-Admiral, R.N. retired, aged 74.

Packham.—On March 31, 1948, George Packham, M.R.C.S., L.R.C.P., of The Drive, Banstead.

Robb.—On April 3, 1948, at Charlescote, Duddingston, Edinburgh, Archibald Paterson Robb, L.R.C.P.&S.Ed.

Robertson.—On April 17, 1948, at 55, Upper Parliament Street, Liverpool, John Wight Robertson, L.R.C.P.&S.Ed., L.R.F.P.S.Glas.

Shennan.—On April 8, 1948, at Bulawayo, Southern Rhodesia, Arnold Hoseason Shennan, M.C., M.D., D.P.H.

Strathie.—On April 18, 1948, at Guy's Hospital, London, S.E., David Murray Strathie, B.M., B.Ch., of 56, North End House, London, W., aged 28.

Turner.—Recently, at Craigielea, Bishopton, Renfrewshire, George Nelson Turner, M.B., C.M.Glas.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Food Value of Honey

Q.—*What are the nutritive properties of honey, and is there any truth in the assertion that it promotes the formation of haemoglobin?*

A.—Natural foodstuffs are so variable in composition that average figures may be misleading. However, according to V. L. S. Charley (*Chemistry and Industry*, 1947, p. 271) the following is an "average analysis" of honey: moisture 17.7%; invert sugar 75.0%; sucrose 2.0%; dextrin 1.5%; ash 0.18%; with traces of pollen, wax, and nitrogenous matter. Other authorities give figures over a range as follows: water 8–25%; glucose 30–42%; fructose 23–39%. The sugars in honey are readily absorbed and, with the exception of the small amount of sucrose, require no preliminary hydrolysis in the small intestine. Unlike starchy foods, honey does not give rise to gas in the intestine. It can be used in diets in place of glucose and cane sugar, and is preferable to the former as it is more palatable. It has been used in infant feeding, but it is slightly laxative. The statement that honey promotes the formation of haemoglobin can have no foundation as it contains none of the known haemopoietic factors and only traces of iron (about 0.11 mg. per ounce). Generally speaking, honey should be regarded solely as a source, and a very attractive one, of calories. Honey is never adulterated with cane sugar, which would ruin the taste. It is often blended with invert sugar, though the blending must be declared on the label, for such a mixture cannot legally be described as honey. There are considerable analytical difficulties in distinguishing between mixtures of honey containing moderate percentages of added invert sugar and pure honey. Certain by-products of the inversion process have sometimes been used; unfortunately, some bees appear to be able to make identical or similar products, thereby making life difficult for the analyst. Blended honeys consist of honeys from several sources. Diluted honeys consist of honey plus invert sugar. However, it is almost certainly true that no reputable manufacturer of branded or unbranded honey sophisticates it with undeclared invert sugar. A wide range of figures has been recorded for the vitamin C content of honey, but it is usually of the order of 5 to 20 mg. ascorbic acid per 100 g., so that even an unusually rich honey is unlikely to contribute much to daily requirements, unless it is taken in exceptionally large quantities. Convincing evidence for the presence of aneurin, riboflavin, or nicotinic acid in honey, at any rate in useful amounts, is not available. A solitary reference to the presence of "vitamin A" in honeycomb does not justify our regarding honey as a source of the vitamin, for it is not clear whether the reference is to vitamin A or to a carotenoid, and if, as seems much the more likely, to the latter whether to a true provitamin or not; nor is there any distinction drawn between the comb and the honey. There appears to be no trustworthy record of the presence of β-carotene in honey as consumed. Royal jelly, of course, contains considerable quantities of the B vitamins and is particularly rich in riboflavin and pantothenic acid.

Exercise in Middle Age

Q.—*Is physical exercise desirable in middle age, or is it deleterious? What are the biochemical factors which make strenuous exercise beneficial in youth but fatiguing and possibly harmful in later life?*

A.—These questions cannot be answered categorically. Bodily exertion of some kind, in greater or less degree, appears to be instinctive from the moment of birth throughout the whole of life, save in the case of the absolutely bedridden. In a state of nature the demand for physical exercise would be satisfied as instinctively as the demands imposed by hunger, thirst, or cold. But, excluding such natural occupations as farming, hunting, lumbering, and the like, the circumstances

of civilization react upon the majority of mankind so that the artificial substitutes of organized exercise become necessary. We may regard the craze for athletics and games as a protest against the thwarted instinct for physical toil of a backwoodsman condemned to a city office or other sedentary life, a protest represented in the younger subject as a craving for something violently competitive.

In later life the intrusion of serious interests and responsibilities tends to prohibit such activities. But, although there is great variability in application, an instinctive impulsion continues in the majority of cases. What is often overlooked is the psychical side of exercise, the factor of recreation, the satisfaction of the play instinct. Golf, shooting, fishing, croquet, curling, bowls, butterfly-hunting, the collection of plants, flowers, and fossils, photography, and similar outdoor pastimes utilize in greater or less degree the exercise of walking in an attractive form when walking alone would be reluctantly accepted as insipid or boring.

With respect to the danger of continuance into middle age of the more strenuous exertion of youth, it seems to be a matter of adjustment to exercise, just as the human body can be acclimatized to high altitudes, to extremes of temperature, or to almost anything. And although it is unusual for the middle-aged man to persist with the exertion of his earlier days there is no reason why such continuance should be exceptional. Youth may thus be prolonged and middle age postponed, at least so far as the tissues are under consideration and not the mere passage of time. But it is the attempt to resume exercise after a period of inactivity which is the usual cause of discomfiture or catastrophe.

In the case of the man who through inclination, determination, or exceptional opportunity has thus extended the period of youth the danger which is generally advanced of "heart strain" with its implications has no foundation. Nature ensures a salutary restriction by the gradual immobilization of joints, automatically limiting activity to a degree well within the capacity of the cardiovascular system.

Prefrontal Leucotomy

Q.—*Where can I find an account of the historical development and present technique of prefrontal leucotomy? How successful is it, and is any special post-operative treatment needed?*

A.—An adequate history of the development of prefrontal leucotomy has yet to be written. Furthermore, the technique of every surgeon differs somewhat. Mr. McKissock has provided an account of his operative technique and directions for post-operative care in *J. ment. Sci.*, 1943, **89**, 194, and the *Lancet*, 1943, **1**, 361. A very full discussion of prefrontal leucotomy by a number of experts was reported in *Proc R. Soc Med.*, 1946, **39**, 443—this is well worth referring to. Fleming has a critical review on recent literature in *J. ment. Sci.*, 1941, **90**, 486. A tome covering all aspects of the subject has been written by the American authorities W. Freeman and J. W. Watts (*Psycho-surgery*, Thomas, Springfield, Ill., 1942). And, finally, there is a recent summary of mental hospital results (*Prefrontal Leucotomy*, H.M. Stationery Office, 1947).

Stellate Ganglion Block for Cerebral Thrombosis

Q.—*Stellate ganglion block has been performed in America for the treatment of early cases of cerebral thrombosis. Is this procedure of any value, and what literature exists on the subject?*

A.—Stellate ganglion block was first used for the treatment of patients with cerebral thrombosis by Leriche and Fontaine (*Rev. Chir., Paris*, 1936, **55**, 755). Mackey and Scott (*British Medical Journal*, 1938, **2**, 1) reported their experiences with the method. They concluded that some initial improvement might occur provided the procedure was undertaken soon enough after the vascular accident. The degree of improvement depended largely upon the status of the other cerebral arteries. If it had any use they felt that the most favourable type of case would be one of cerebral embolism in a young person. There does not appear to have been much published on the method recently.

Pain in Phantom Foot

Q.—*What is the correct treatment for severe pains in a "phantom" foot? This patient's right leg was amputated twenty years ago and the stump is apparently healthy.*

A.—The problem of the painful phantom limb is one which has not been satisfactorily solved. Sensations in the lost extremity are of course experienced for a while by almost all those who have undergone amputation. Such sensations are usually painless, and tend to pass off in the course of time. Painful sensations in a phantom limb are relatively uncommon. The cause is unknown—in many cases the stump has healed rapidly and appears satisfactory on examination. Treatment is difficult and often ineffective. Measures which have been tried and which require consideration include excision of stump neuromata; division of the nerve trunks proximal to the end of the stump; and section of the appropriate posterior nerve roots. But the symptoms commonly persist in spite of these procedures. Re-amputation at a higher level is also unlikely to be successful. The management of these cases is thus distressingly difficult. It is beneficial for the patient to wear his prosthesis if it can be tolerated, and this should be encouraged.

Thiouracil in Toxic Goitre

Q.—*I have read the article entitled "Thiouracil in Toxic Goitre" in the Journal of Nov. 15, 1947 (p. 759), and have a question to put as regards continuation of thiouracil for longer periods. Is it possible that after recovery from initial hyperthyroid symptoms the dosage of thiouracil can be gradually reduced and finally replaced with Lugol's iodine or potassium iodide for maintenance therapy? Can iodine alone, or with thiouracil, be used for prolonged maintenance therapy?*

A.—It is true that after initial control of symptoms the dose of thiouracil can be reduced to 100 mg. daily or less and the patient thus maintained in good health. In a certain proportion of cases the drug can be discontinued after six months or more and symptoms do not recur. This is true of the diffuse toxic goitre of young persons, which is often a self-limiting disease; but in the middle-aged patient with a nodular goitre relapse almost always follows within four months of withholding thiouracil. The beneficial effects of iodine are of much shorter duration, and it is usual to find that there is maximal improvement 14 to 21 days after beginning treatment. It is unusual for this improvement to be maintained, and there are no *a priori* reasons for thinking that it would be effective in the manner suggested, although no record of its use in this fashion has been found.

Heart Attack After Alcoholic Excess

Q.—*A patient aged 30, waking up after a bibulous night, presented an irregularly irregular pulse which persisted for twenty-four hours. The heart appears normal. There is a history of rheumatic fever, without cardiac involvement, at the age of 20. What is the prognosis, and is this kind of attack unusual? Could it occur in a normal heart?*

A.—This attack was presumably due to the toxic action of alcohol on the heart, which is occasionally seen in susceptible persons. The prognosis is excellent provided that the subject avoids alcoholic excess. The signs observed can occur in a normal heart.

Incontinence of Urine in the Elderly

Q.—*A patient aged 80 is suffering from incontinence of urine. Her general health is fairly good, except for slight anginal attacks. She passes large quantities of urine which contains no sugar. Is any operation of use, or is there any appliance she could wear?*

A.—It is not stated whether the incontinence is due to a fistula or to a defect in the urethral sphincter mechanism. In either case there appear to be several contraindications to surgical treatment. If it can be assumed that the case is one of urethral incontinence, then it may well be due to senile atrophy of muscles and fascia in the region of the bladder-neck and urethra. A vaginal pessary is not likely to help unless the patient has a cystocele as well. Urinary infection,

nerve lesions, and other possible aetiological factors should be excluded. If all these are excluded, oestrogen in small doses should be tried; a suitable trial dose would be oestrone, 0.3 mg. thrice daily by mouth for three weeks, followed by an interval of seven to ten days, and then repeated. If too much is given it will cause uterine bleeding. A surgical appliance that might be tried is a female urinal strapped to the vulva; but apparatus of this type is rarely satisfactory. Replies to questions published in the *Journal* of Jan. 27, 1945 (p. 139), and Dec. 1, 1945 (p. 792), should also be consulted.

Cellulitis of the Nose

Q.—*A patient suffers from a recurring cellulitis of the nose. It seems to arise from an infection caused by an irritation or by microscopic cracks at the margins of the nostrils. I have treated it with various ointments, including penicillin, and find that the daily application of ung. hydr. ox. flav. dil. is the best way to control it. The patient, 68 years old, is healthy, and has given up tobacco because the smoke made the nose worse. Can you suggest an effective cure?*

A.—If the vestibular fissuring is not due to intranasal infection (ethmoiditis, etc.) or some other local focus of infection, penicillin parenterally and sulphonamide therapy by mouth should be tried after investigating the sensitivity of the organisms concerned. Small fractional doses of *x* rays are sometimes effective, and sulphathiazole snuff might be tried.

Döderlein's Bacillus

Q.—(*a*) *What is Döderlein's bacillus?* (*b*) *Is it a harmless saprophyte found only in the vagina?* (*c*) *Does the fact of finding this bacillus in a vaginal smear indicate that any treatment is necessary?* (*d*) *Is it at all harmful to the male (following coitus)?*

A.—(*a*) A species of *Lactobacillus* leading a purely saprophytic existence in the vagina of the adult woman, where the acid reaction due to the formation of lactic acid from glycogen in the vaginal epithelium favours its growth. (*b*) Yes. (*c*) No. (*d*) No.

Flatus in the Elderly

Q.—*What is the pathology of the flatulence, and particularly flatus, which afflicts many elderly people nowadays? Is there an effective treatment?*

A.—There are no essential differences between the flatulence of the elderly and that of younger persons. In both instances gastric flatulence is almost always due to swallowed air, and intestinal flatulence to gas generated locally. The latter is due either to excessive carbohydrate fermentation or to excessive protein putrefaction. The diet provided by the present rations, although sufficient safeguard from the latter, is on account of its high carbohydrate content the cause of the prevailing intestinal wind. In the elderly the affliction is more troublesome perhaps because of decreased intestinal tone. Treatment consists in reducing, so far as is possible, the consumption of bread and potatoes. Charcoal and kaolin may do much to decrease discomfort.

Spondylitis Ossificans

Q.—*During a bombing raid in 1940 a policeman was trapped under falling masonry and sustained a fractured skull. He recovered from the injury, but a year later developed spondylitis ossificans, which has progressed so that his head is held at an angle of about 60 degrees to his spine. A board held that the spondylitis could not have been caused by the trauma sustained a year previously. Is this view probably correct?*

A.—If this is in fact a true case of ankylosing spondylitis, as it appears to be from the description given, it is probably correct to state that the spondylitis is not related to the trauma previously sustained. Although the cause of ankylosing spondylitis is not known with any certainty, it is accepted fairly widely that it results from a low-grade infective process—a view which is supported by the usual course of the disease and by the raised blood sedimentation rate during the stage of activity. Trauma has not been shown to be a significant factor in the aetiology; indeed, in most cases of ankylosing spondylitis no definite history of major trauma is obtained.

Treatment of Amoebiasis

Q.—*Would you let me have information on any recent advances in the treatment of amoebiasis?*

A.—There has been little recent advance in the specific treatment of amoebiasis. Combined treatment with emetine bismuth iodide, chiniofon, and acetarsol or carbarsone remains the standard therapy usually employed in British practice for intestinal amoebiasis, while emetine hydrochloride is the specific agent used when the liver or other organs are infected. For intestinal infections "diodoquin" has advocates; it is less easily absorbed than chiniofon, but its therapeutic superiority is doubtful. If there is much ulceration of the gut, with secondary infection, a course of penicillin and some sulphonamide compound is now commonly used in association with the specific amoebicidal treatment.

NOTES AND COMMENTS

Great Anticipations.—Mr. E. WATSON-WILLIAMS (Clifton, Bristol) writes: "If the nerve is successfully located . . . relief for . . . eighteen months is to be *anticipated*" (April 10, p. 718). This has no meaning: the relief may be desired, or expected—it cannot possibly be *anticipated*. Even Fry's famous advertisement distinguishes "expectation" from "anticipation."

Apology.—Messrs. Menley and James, Ltd., manufacturing chemists of Coldharbour Lane, London, S.E.5, write: Our attention has been drawn to the leaflet published by us entitled "A Symposium on the uses of 'Benzedrine.'" This contained abstracts of or extracts from papers read at a meeting of the Society for the Study of Addiction, by Dr. Crichton Miller, Professor R. C. Browne, and Dr. G. de M. Rudolf, amongst others, dealing with the effects of amphetamine. It is represented to us that this pamphlet is so worded as to give the impression that these gentlemen were advocating the use of "benzedrine" tablets, a proprietary preparation of amphetamine sulphate manufactured and distributed by our firm. We regret very much if the pamphlet was so worded as to give this impression and desire to make it clear that the gentlemen in question were not consulted and had no part in the preparation and publication of this pamphlet.

INCOME TAX

Expenses

L. D. is acting as a locumtenent but will shortly be taking up an appointment as house physician. He inquires as to certain travelling and other expenses.

*** (*a*) Use of car while at the hospital for travelling to a pathological centre. A reasonable proportion of the total car expenses is allowable provided that visiting the centre is part of the work required under the service agreement with the hospital authority.

(*b*) Purchase of medical books and instruments. The cost of getting together a medical library is not allowable—it represents an outlay of capital. The cost of keeping it up to date is allowable provided that the maintenance of a private reference library is required under the contract of employment.

(*c*) L. D. should ask for the locumtenent fees to be assessed under Schedule D. In that case he can claim the cost of one journey to and from the place where the work is done and also other expenses, such as any commission paid by him. But the cost of a weekly visit home is, we fear, likely to be refused as not incurred in doing the work for which the fees are received.

(*d*) Generally the rule under Schedule E (relating to employment) is a very rigid one; to be allowable the expenses must be incurred wholly, exclusively, and necessarily in the performance of the duties of the employment.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Britmedads, Westcent, London.*

MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra, Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.